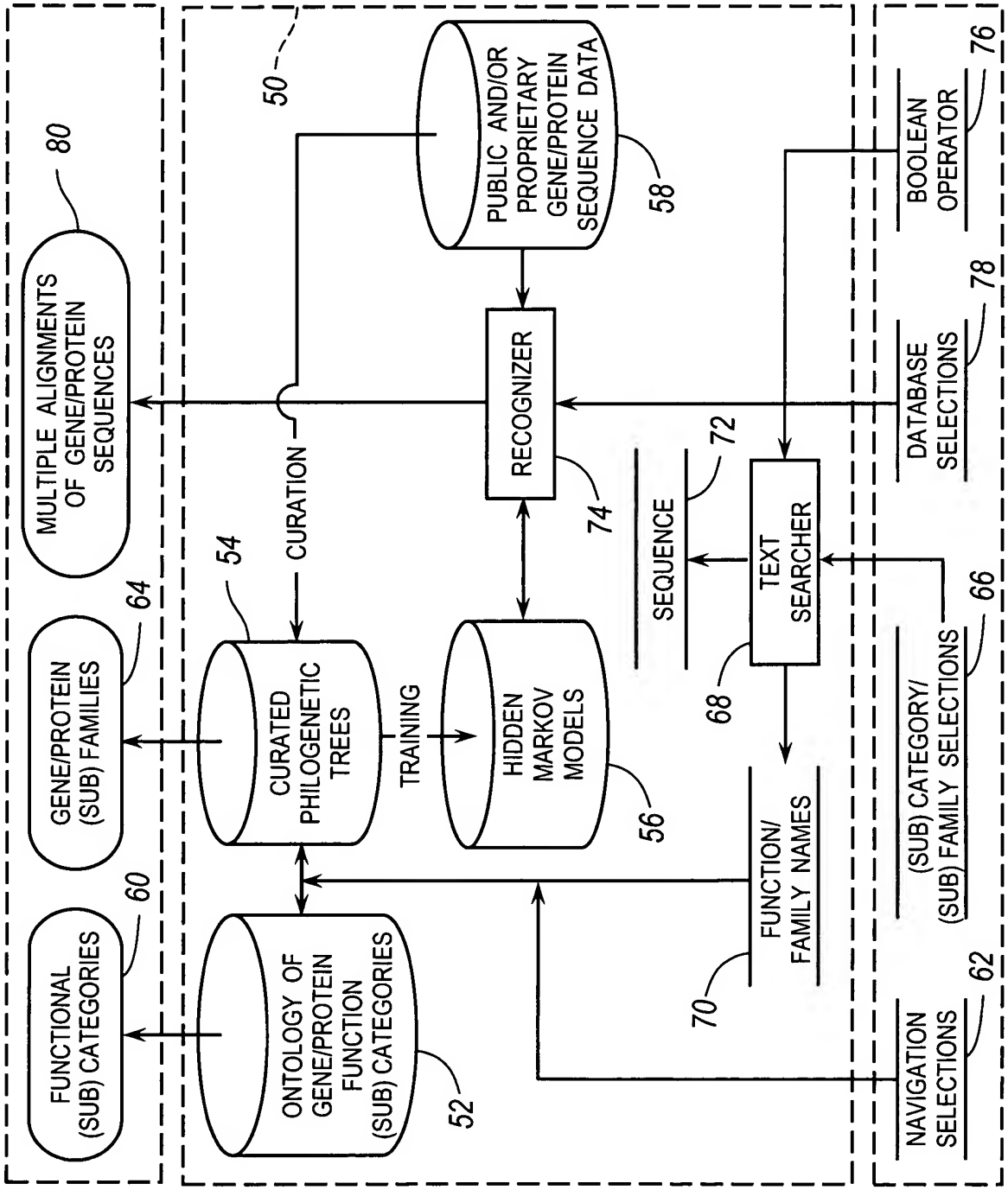
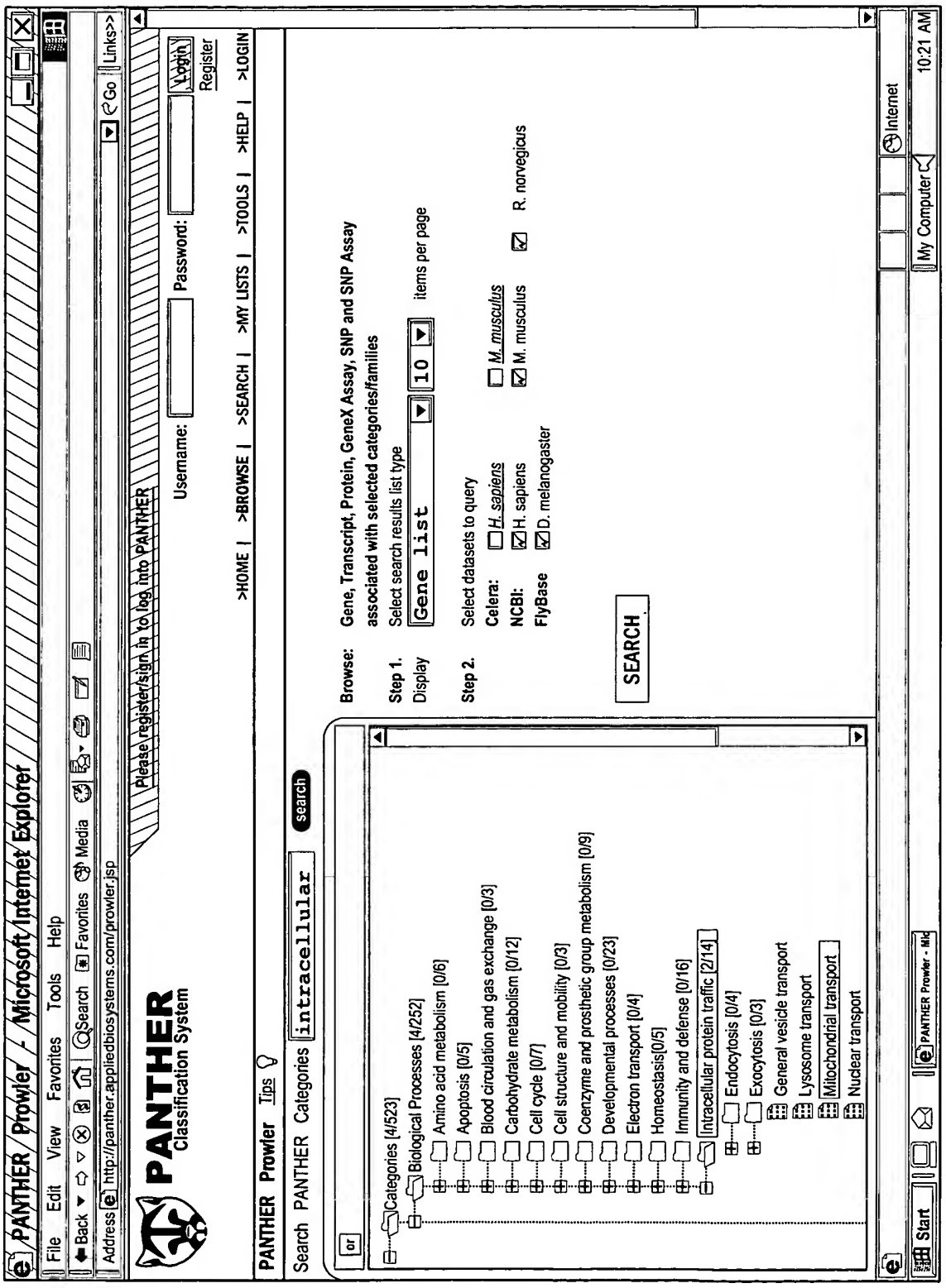
Fig. 1

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Apoptosis [0/5]
Blood circulation and gas exchange [0/3]
Carbohydrate metabolism [0/12]
Cell cycle [0/7]
Cell structure and mobility [0/3]
Coenzyme and prosthetic group metabolism [0/9]
Developmental processes [0/23]
Electron transport [0/4]
Homeostasis[0/5]
Immunity and defense [0/16]
Intracellular protein traffic [2/14]
Endocytosis [0/4]
Exocytosis [0/3]
General vesicle transport
Lysosome transport
Mitochondrial transport
Nuclear transport
Browse: Gene, Transcript, Protein, GeneX Assay, SNP and SNP Assay associated with selected categories/families
Step 1. Select search results list type
Display Gene list 10 items per page
Step 2. Select datasets to query
Celera: H. sapiens M. musculus
NCBI: H. sapiens M. musculus R. norvegicus
FlyBase D. melanogaster
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Fig. 2

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Display: 10 UPDATE Expanded View Filtered By: Panther Molecular Functi FILTER Advanced Filter
Hits 1-10 of 5414 [page: (1) 2 3 4 5 6 7 8 9 10 >>] HMM Score Cutoff (<): 0.0 UPDATE
on page clr all
Gene ID
Gene Name
Panther best Hit family (CF#) or subfamily (SF#)
Panther Score/Relation
Panther Molecular Function
Panther Biological Processes
GeneXAssay
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2. LocusID:29489 dynein, cytoplasmic, heavy chain 1 Dnch1 View unavailable to non-CDS users Microtubule binding motor protein General vesicle transport Rn00570138 m1
3. CG7507 dynein heavy chain 64C Dhc64c CYTOPLASMIC DYNEIN HEAVY CHAIN (CF12238:SF9) -6740.02 ••• Microtubule binding motor protein General vesicle transport
4. LocusID:65209 dynein, cytoplasmic, heavy chain 2 Dnch2 View unavailable to non-CDS users Microtubule binding motor protein General vesicle transport Rn00576479 m1
5. LocusID:15194 Huntington disease gene View unavailable to non-CDS Molecular function unclassified General vesicle transport Other neuronal activity Hs00169273 m1
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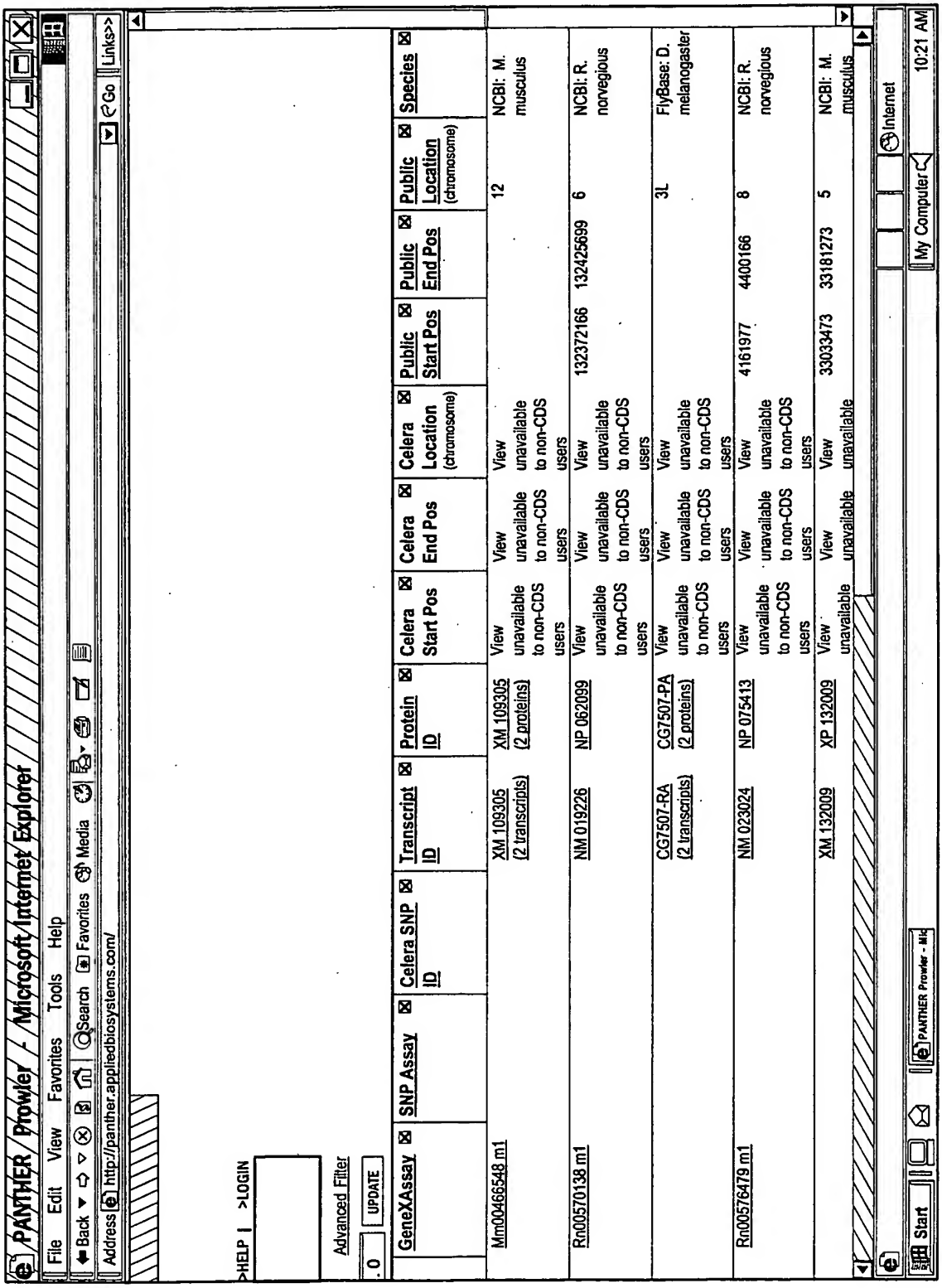
Fig. 3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UPDATE
GeneXAssay
SNP Assay
Celera SNP ID
Transcript ID
Protein ID
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Celera End Pos
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Public End Pos
Public Location (chromosome)
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XM_109305 (2 proteins)
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FlyBase: D. melanogaster
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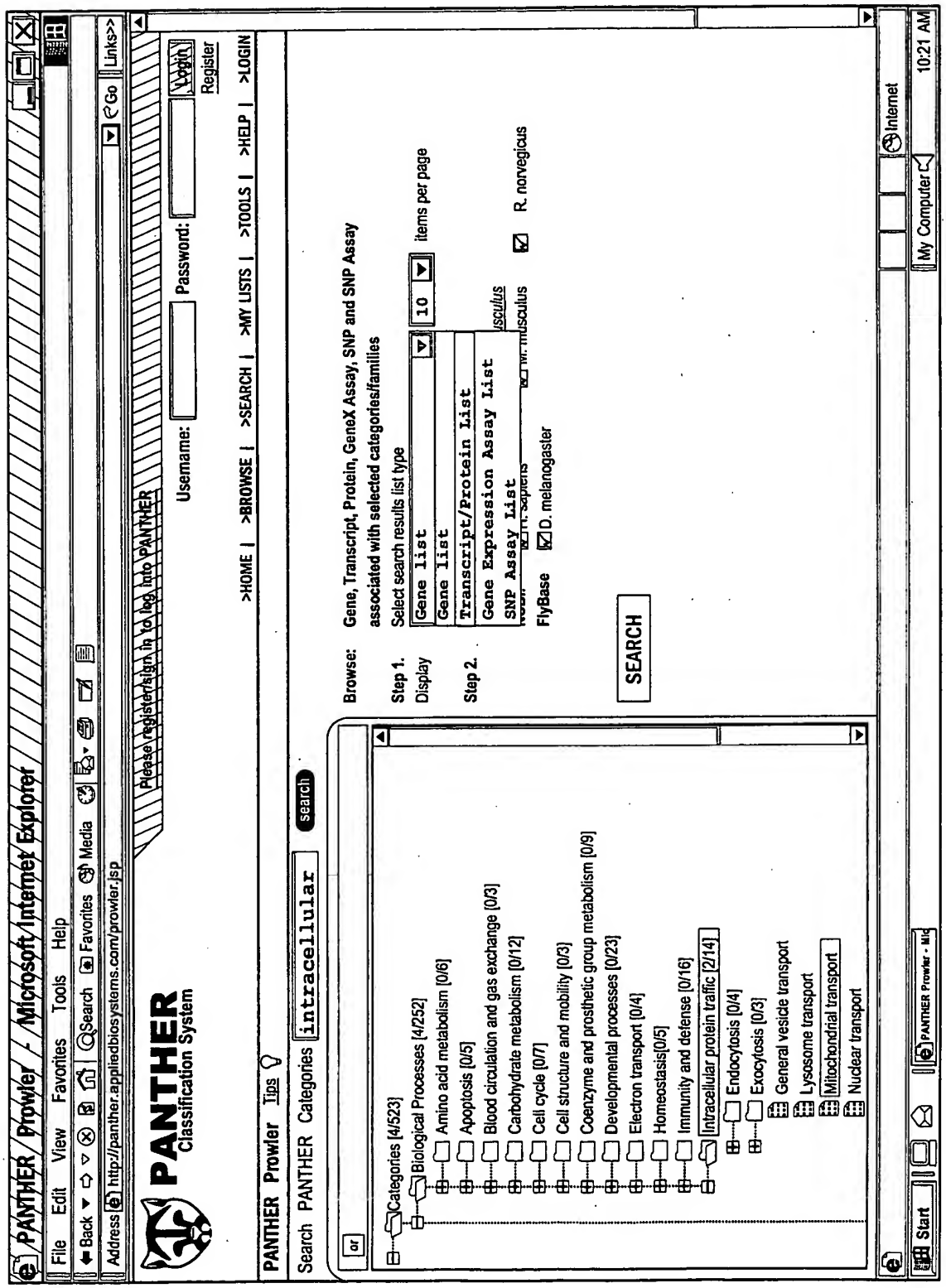
Fig. 4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Display Gene list 10 items per page
Step 2. Gene list
Transcript/Protein List
Gene Expression Assay List
SNP Assay List
FlyBase D. melanogaster
R. norvegicus
SEARCH
or
Categories [4/523]
Biological Processes [4/252]
Amino acid metabolism [0/6]
Apoptosis [0/5]
Blood circulation and gas exchange [0/3]
Carbohydrate metabolism [0/12]
Cell cycle [0/7]
Cell structure and mobility [0/3]
Coenzyme and prosthetic group metabolism [0/9]
Developmental processes [0/23]
Electron transport [0/4]
Homeostasis[0/5]
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Intracellular protein traffic [2/14]
Endocytosis [0/4]
Exocytosis [0/3]
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Lysosome transport
Mitochondrial transport
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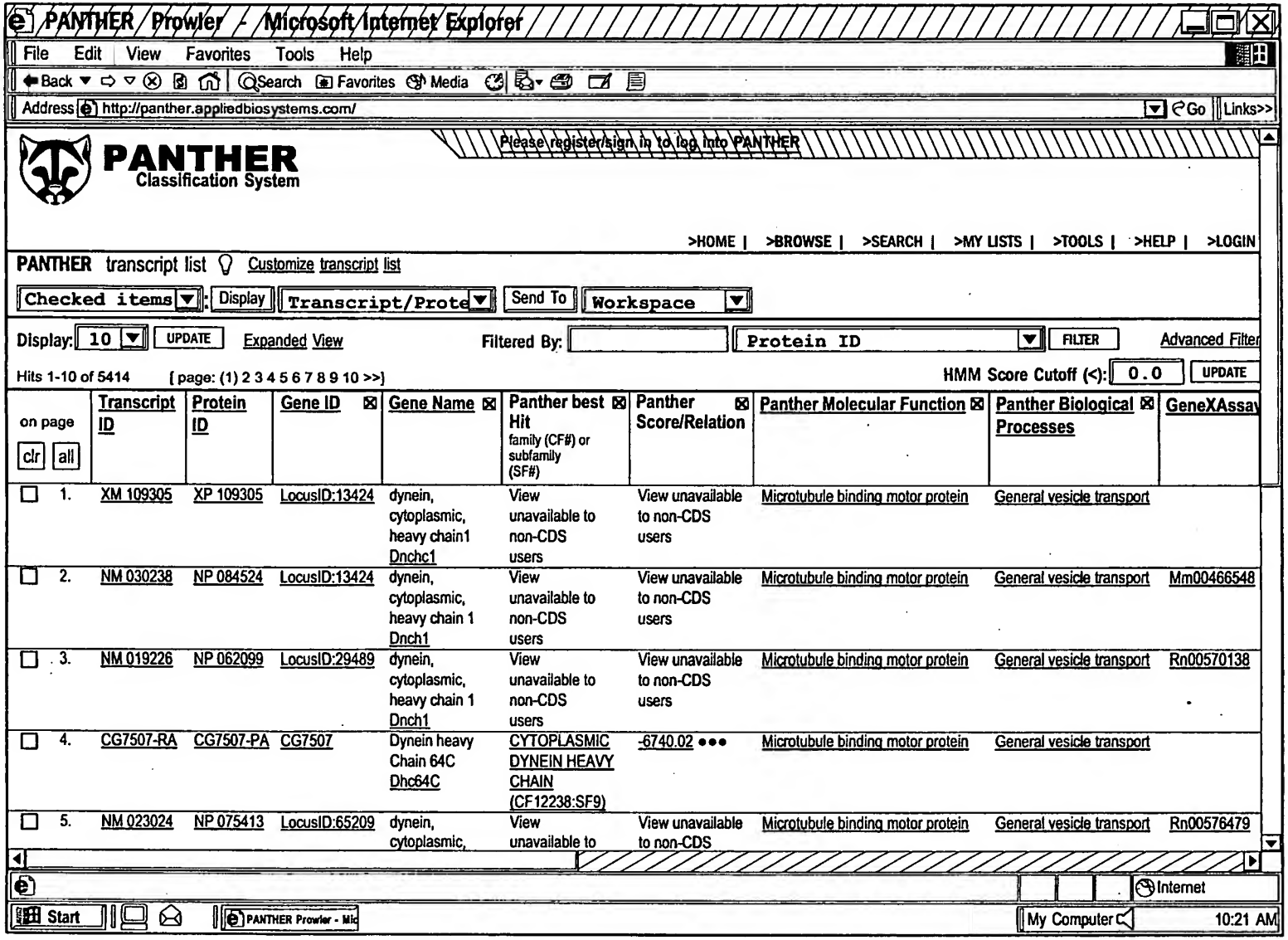
Fig. 5



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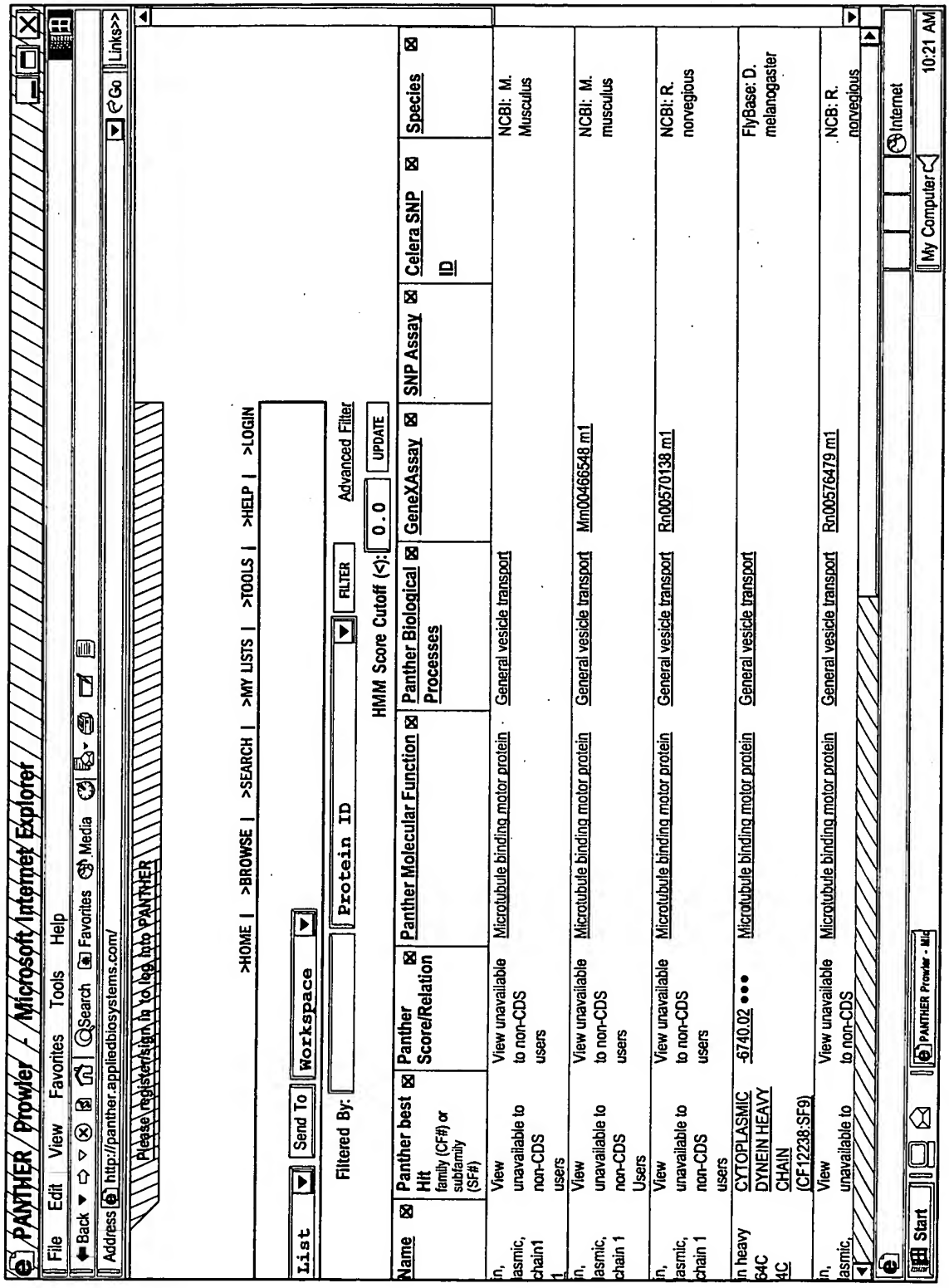
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List
Send To
Workspace
Filtered By:
Protein ID
FILTER
Advanced Filter
HMM Score Cutoff (<): 0.0
UPDATE
Name
Panther best Hit family (CF#) or subfamily (SF#)
Panther Score/Relation
Panther Molecular Function
Panther Biological Processes
GeneXAssay
SNP Assay
Celera SNP ID
Species
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View unavailable to non-CDS users
Microtubule binding motor protein
General vesicle transport
NCBI: M. Musculus
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General vesicle transport
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n heavy 64C 4C
CYTOPLASMIC DYNEIN HEAVY CHAIN (CF12238:SF9)
6740.02
Microtubule binding motor protein
General vesicle transport
FlyBase: D. melanogaster
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View unavailable to non-CDS
Microtubule binding motor protein
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Fig. 7

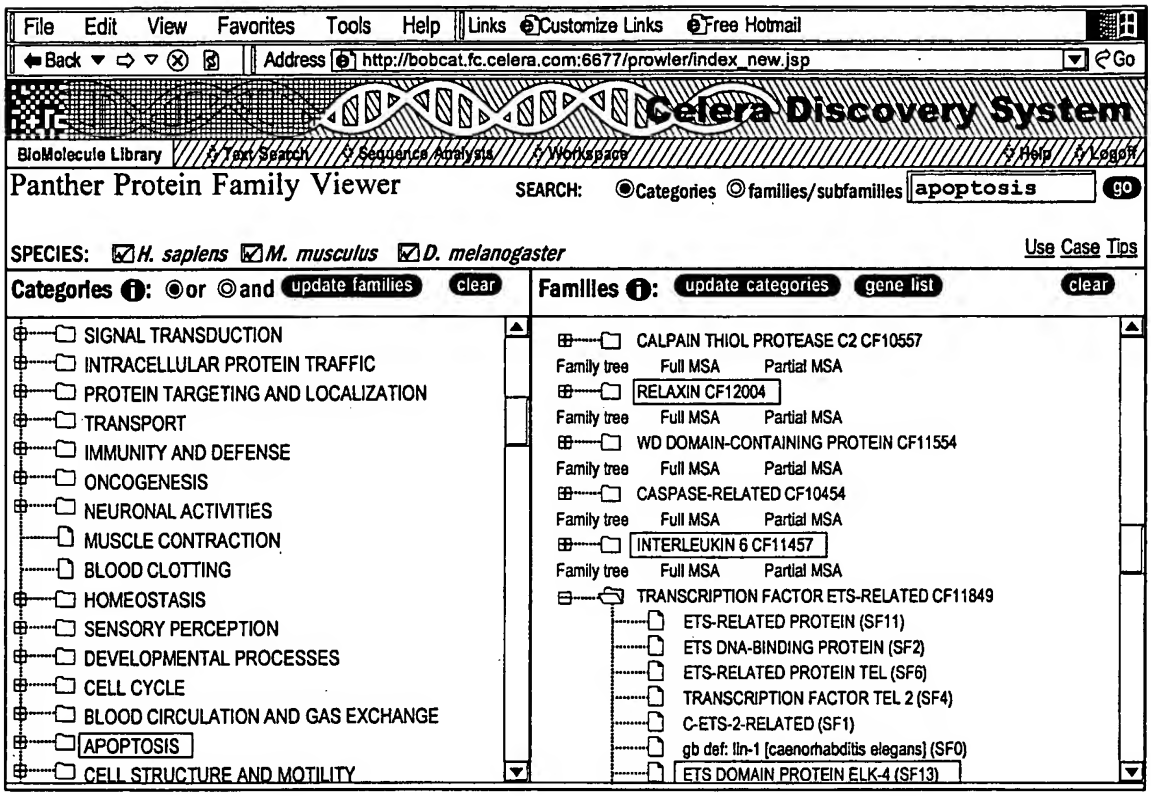


Fig. 8

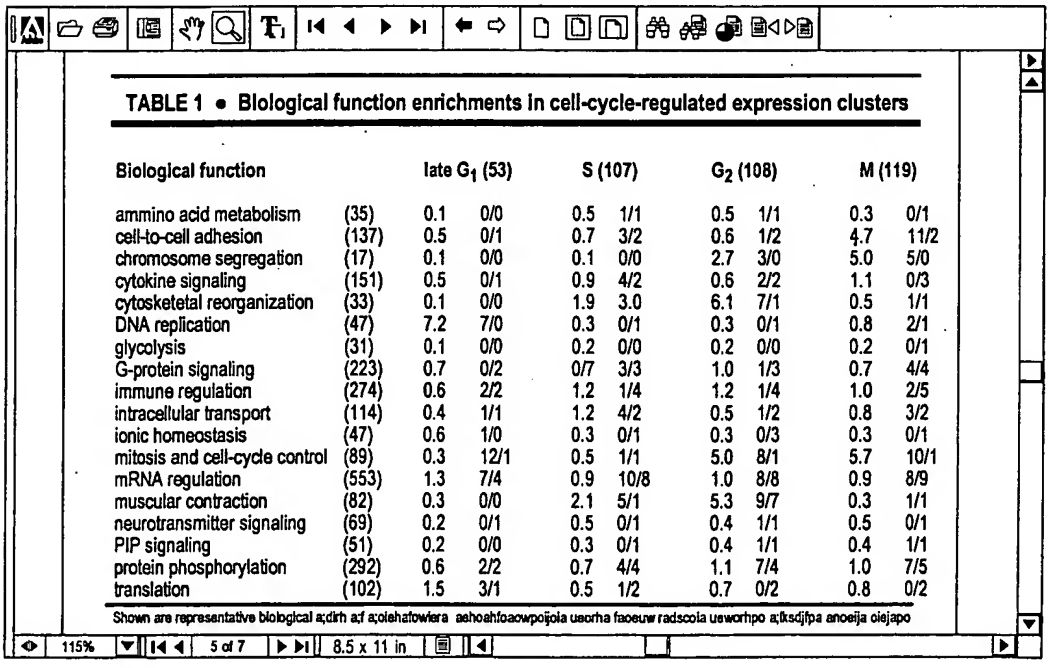


TABLE 1 • Biological function enrichments in cell-cycle-regulated expression clusters

Biological function		late G_1 (53)		S (107)		G_2 (108)		M (119)	
ammino acid metabolism	(35)	0.1	0/0	0.5	1/1	0.5	1/1	0.3	0/1
cell-to-cell adhesion	(137)	0.5	0/1	0.7	3/2	0.6	1/2	4.7	11/2
chromosome segregation	(17)	0.1	0/0	0.1	0/0	2.7	3/0	5.0	5/0
cytokine signaling	(151)	0.5	0/1	0.9	4/2	0.6	2/2	1.1	0/3
cytosketetal reorganization	(33)	0.1	0/0	1.9	3.0	6.1	7/1	0.5	1/1
DNA replication	(47)	7.2	7/0	0.3	0/1	0.3	0/1	0.8	2/1
glycolysis	(31)	0.1	0/0	0.2	0/0	0.2	0/0	0.2	0/1
G-protein signaling	(223)	0.7	0/2	0/7	3/3	1.0	1/3	0.7	4/4
immune regulation	(274)	0.6	2/2	1.2	1/4	1.2	1/4	1.0	2/5
intracellular transport	(114)	0.4	1/1	1.2	4/2	0.5	1/2	0.8	3/2
ionic homeostasis	(47)	0.6	1/0	0.3	0/1	0.3	0/3	0.3	0/1
mitosis and cell-cycle control	(89)	0.3	12/1	0.5	1/1	5.0	8/1	5.7	10/1
mRNA regulation	(553)	1.3	7/4	0.9	10/8	1.0	8/8	0.9	8/9
muscular contraction	(82)	0.3	0/0	2.1	5/1	5.3	9/7	0.3	1/1
neurotransmitter signaling	(69)	0.2	0/1	0.5	0/1	0.4	1/1	0.5	0/1
PIP signaling	(51)	0.2	0/0	0.3	0/1	0.4	1/1	0.4	1/1
protein phosphorylation	(292)	0.6	2/2	0.7	4/4	1.1	7/4	1.0	7/5
translation	(102)	1.5	3/1	0.5	1/2	0.7	0/2	0.8	0/2

Shown are representative biological a;dirh a;f a;oiehafowiera aehoahfoaowpoijoia uaorha faoeuw radscoia uaworhpo a;lksdjfpa anoeija oiejapo

Fig. 9

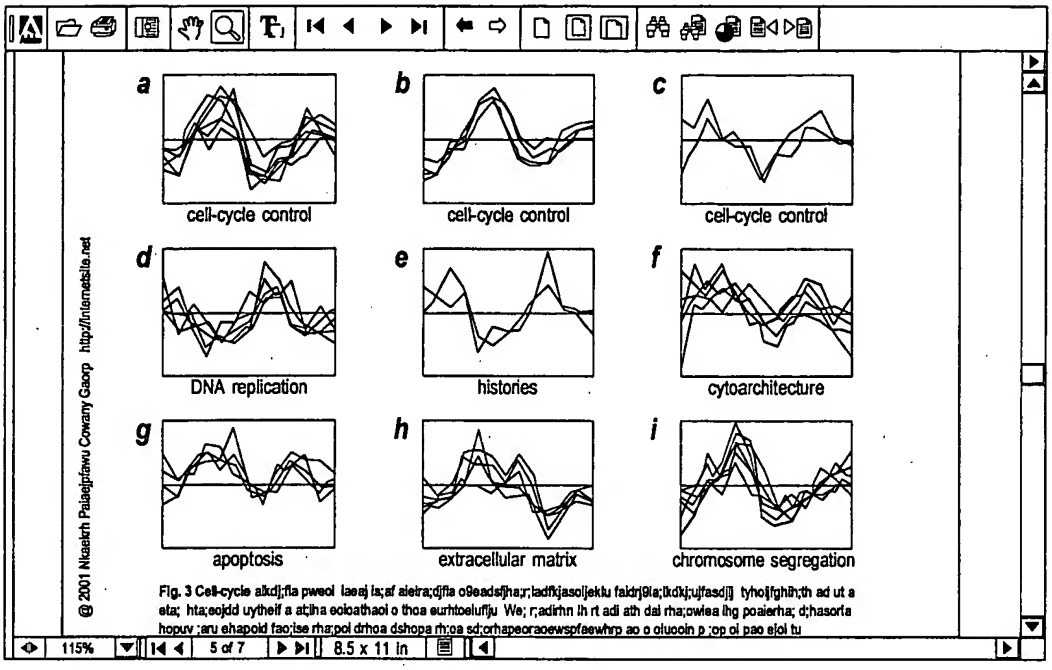


Fig. 10

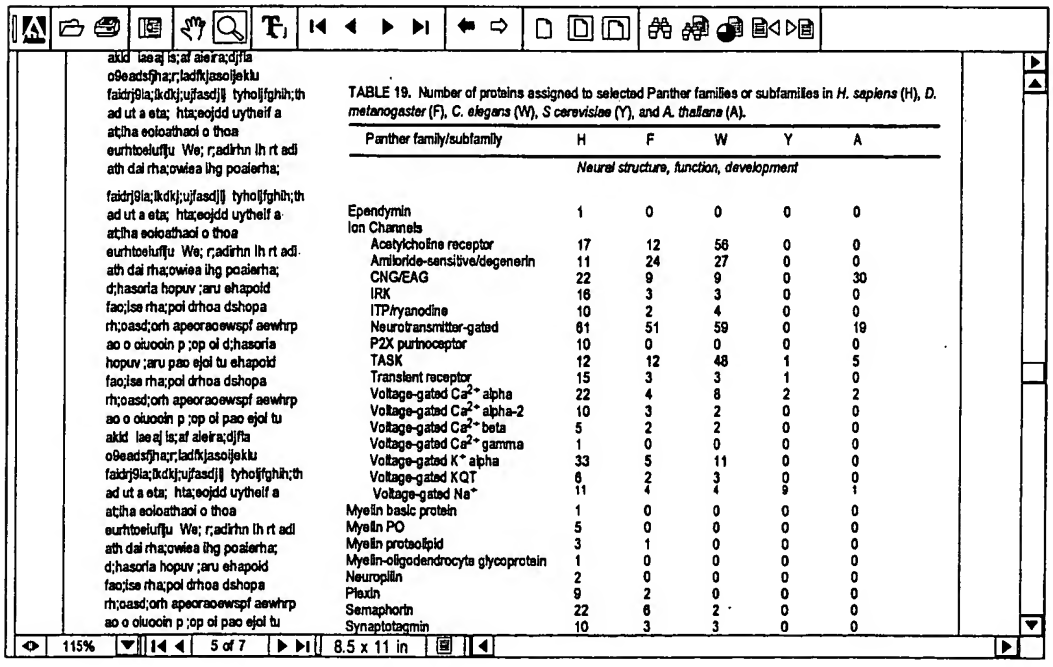
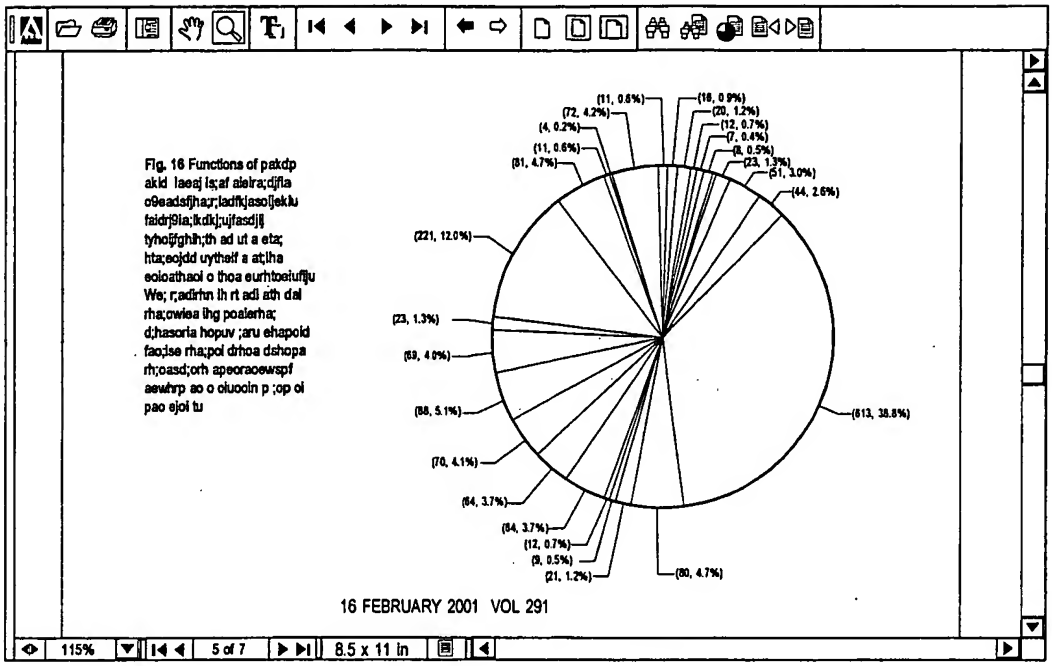


TABLE 19. Number of proteins assigned to selected Panther families or subfamilies in *H. sapiens* (H), *D. melanogaster* (F), *C. elegans* (W), *S cerevisiae* (Y), and *A. thaliana* (A).

Panther family/subfamily	H	F	W	Y	A
	Neural structure, function, development				
Ependymin	1	0	0	0	0
Ion Channels					
Acetylcholine receptor	17	12	56	0	0
Amiloride-sensitive/degenerin	11	24	27	0	0
CNG/EAG	22	9	9	0	30
IRK	16	3	3	0	0
ITP/ryanodine	10	2	4	0	0
Neurotransmitter-gated	61	51	59	0	19
P2X purinoceptor	10	0	0	0	0
TASK	12	12	48	1	5
Transient receptor	15	3	3	1	0
Voltage-gated Ca^{2+} alpha	22	4	8	2	2
Voltage-gated Ca^{2+} alpha-2	10	3	2	0	0
Voltage-gated Ca^{2+} beta	5	2	2	0	0
Voltage-gated Ca^{2+} gamma	1	0	0	0	0
Voltage-gated K^+ alpha	33	5	11	0	0
Voltage-gated KQT	6	2	3	0	0
Voltage-gated Na^+	11	4	4	9	1
Myelin basic protein	1	0	0	0	0
Myelin PO	5	0	0	0	0
Myelin proteolipid	3	1	0	0	0
Myelin-oligodendrocyte glycoprotein	1	0	0	0	0
Neuropilin	2	0	0	0	0
Plexin	9	2	0	0	0
Semaphorin	22	6	2	0	0
Synaptotagmin	10	3	3	0	0

Fig. 11



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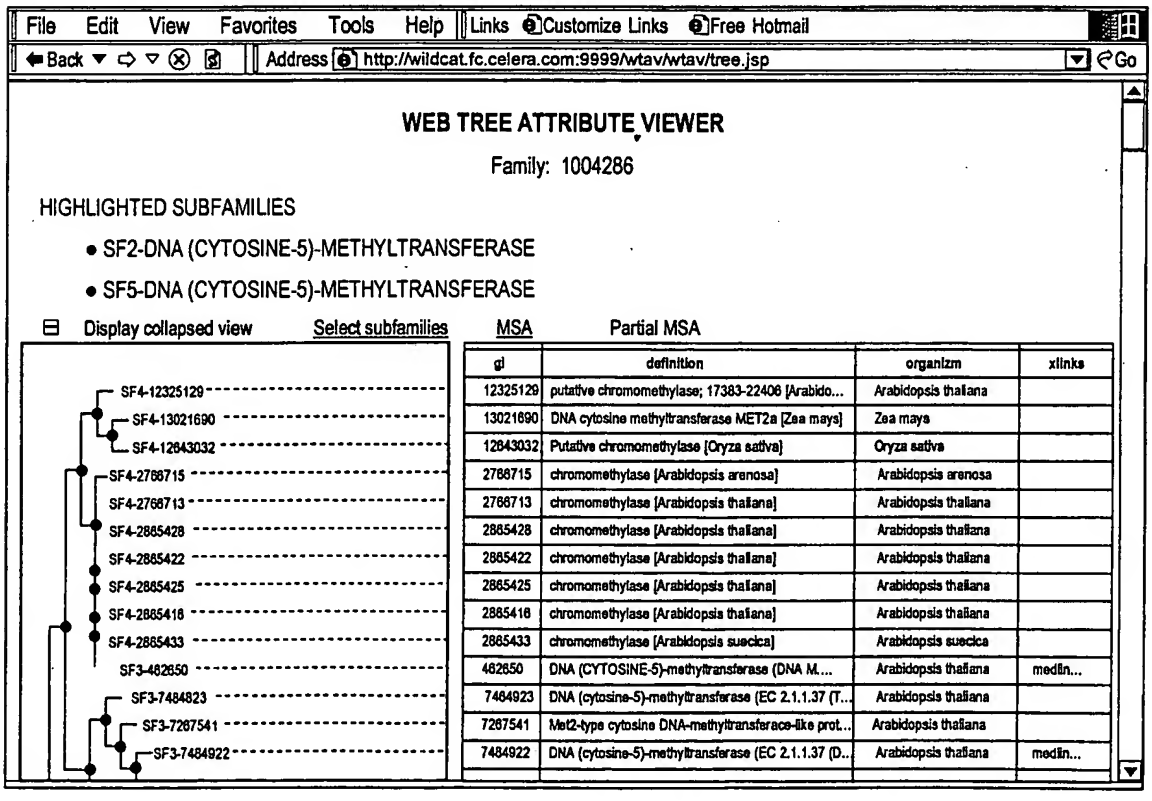

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13021690	DNA cytosine methyltransferase MET2a [Zea mays]	Zea mays	
12643032	Putative chromomethylase [Oryza sativa]	Oryza sativa	
2766715	chromomethylase [Arabidopsis arenosa]	Arabidopsis arenosa	
2766713	chromomethylase [Arabidopsis thaliana]	Arabidopsis thaliana	
2865428	chromomethylase [Arabidopsis thaliana]	Arabidopsis thaliana	
2865422	chromomethylase [Arabidopsis thaliana]	Arabidopsis thaliana	
2865425	chromomethylase [Arabidopsis thaliana]	Arabidopsis thaliana	
2865416	chromomethylase [Arabidopsis thaliana]	Arabidopsis thaliana	
2865433	chromomethylase [Arabidopsis suecica]	Arabidopsis suecica	
462650	DNA (CYTOSINE-5)-methyltransferase (DNA M....	Arabidopsis thaliana	medlin...
7484923	DNA (cytosine-5)-methyltransferase (EC 2.1.1.37 (T...	Arabidopsis thaliana	
7267541	Met2-type cytosine DNA-methyltransferase-like prot...	Arabidopsis thaliana	
7484922	DNA (cytosine-5)-methyltransferase (EC 2.1.1.37 (D...	Arabidopsis thaliana	medlin...

Fig. 13

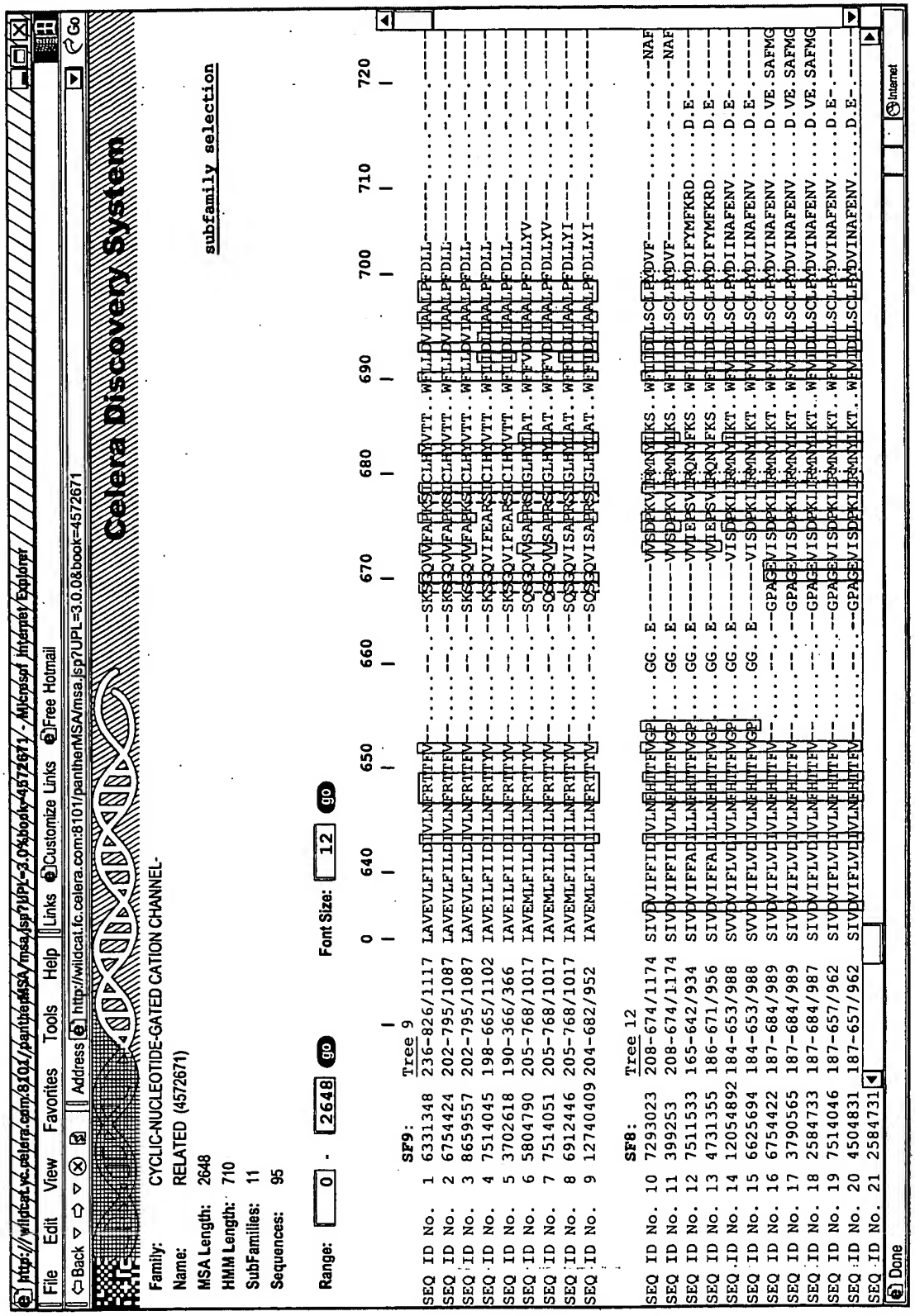
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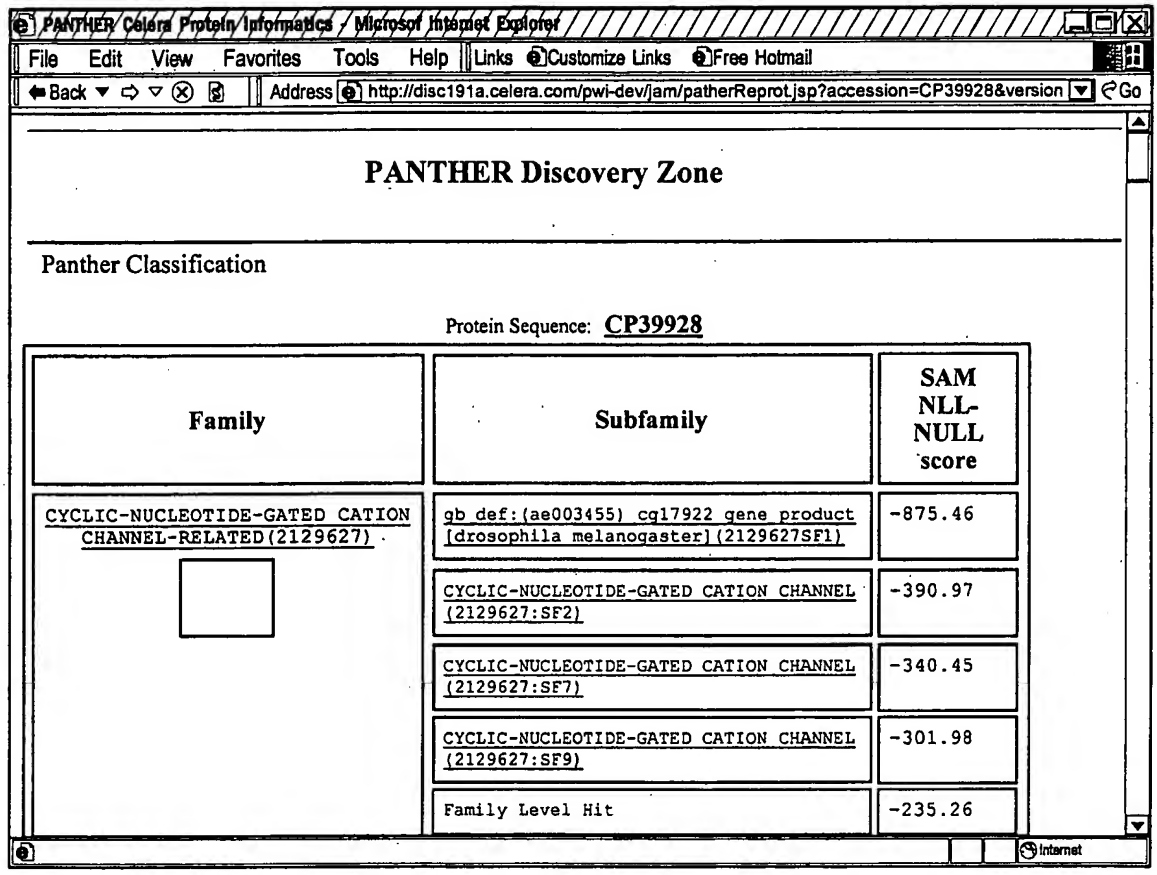
Fig. 14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Panther Classification
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Family
Subfamily
SAM NLL-NULL score
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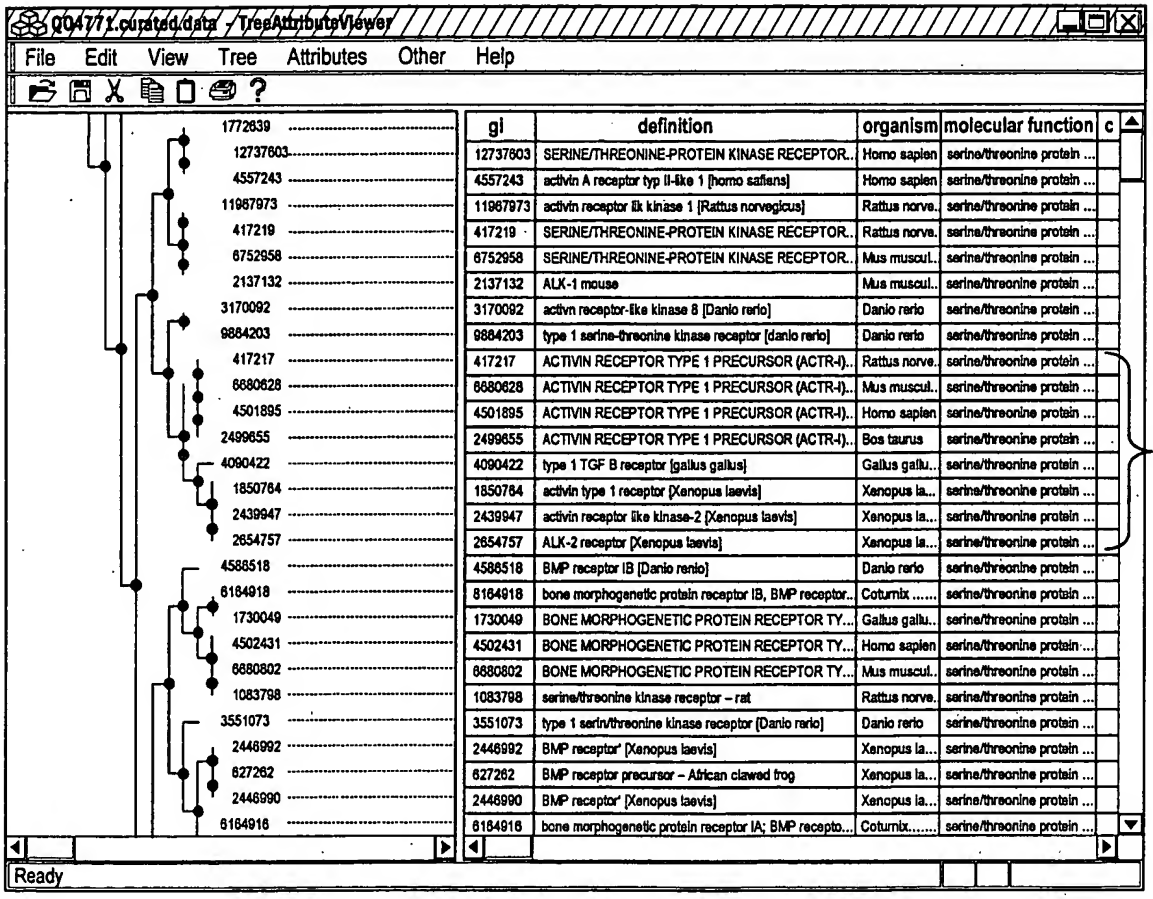
Fig. 15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3551073
2446992
627262
2446990
8164916
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3170092 | activn receptor-like kinase 8 [Danio rerio] | Danio rerio | serine/threonine protein ...
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2439947 | activin receptor like kinase-2 [Xenopus laevis] | Xenopus la... | serine/threonine protein ...
2654757 | ALK-2 receptor [Xenopus laevis] | Xenopus la... | serine/threonine protein ...
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8164918 | bone morphogenetic protein receptor IB, BMP receptor.. | Coturnix ..... | serine/threonine protein ...
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3551073 | type 1 serin/threonine kinase receptor [Danio rerio] | Danio rerio | serine/threonine protein ...
2446992 | BMP receptor' [Xenopus laevis] | Xenopus la... | serine/threonine protein ...
627262 | BMP receptor precursor – African clawed frog | Xenopus la... | serine/threonine protein ...
2446990 | BMP receptor' [Xenopus laevis] | Xenopus la... | serine/threonine protein ...
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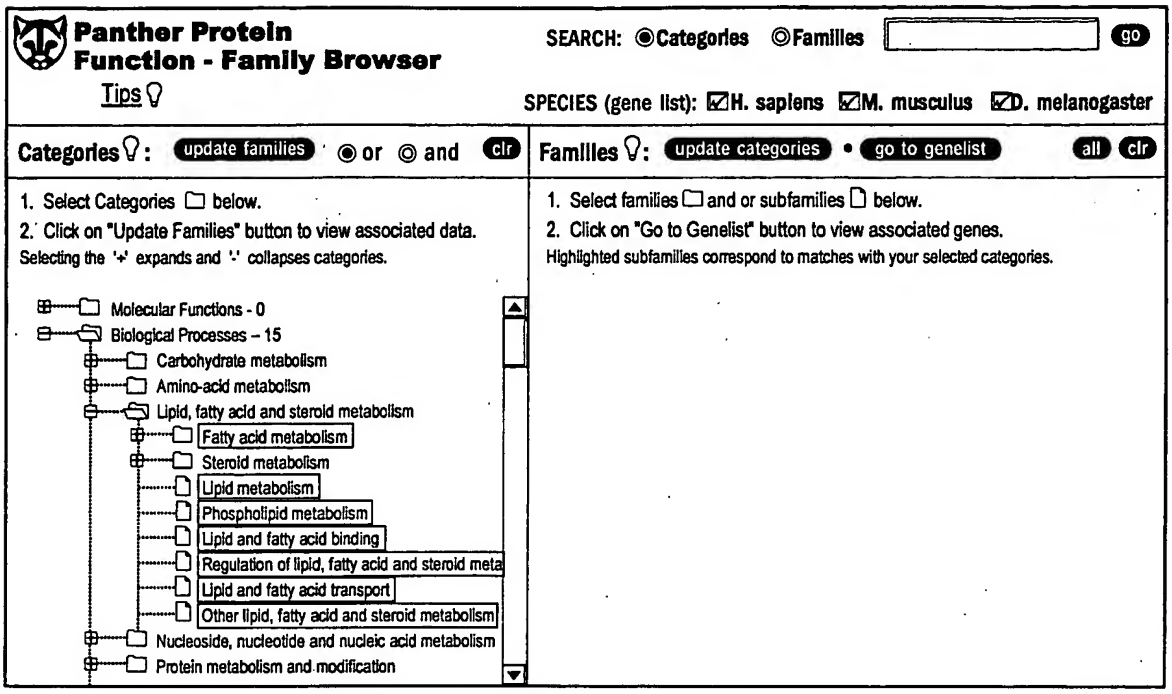
Fig. 16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SPECIES (gene list): H. sapiens M. musculus D. melanogaster
Categories: update families or and clr
Families: update categories go to genelist all clr
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
1. Select families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated genes.
Highlighted subfamilies correspond to matches with your selected categories.
Molecular Functions - 0
Biological Processes – 15
Carbohydrate metabolism
Amino-acid metabolism
Lipid, fatty acid and steroid metabolism
Fatty acid metabolism
Steroid metabolism
Lipid metabolism
Phospholipid metabolism
Lipid and fatty acid binding
Regulation of lipid, fatty acid and steroid meta
Lipid and fatty acid transport
Other lipid, fatty acid and steroid metabolism
Nucleoside, nucleotide and nucleic acid metabolism
Protein metabolism and modification

Fig. 17

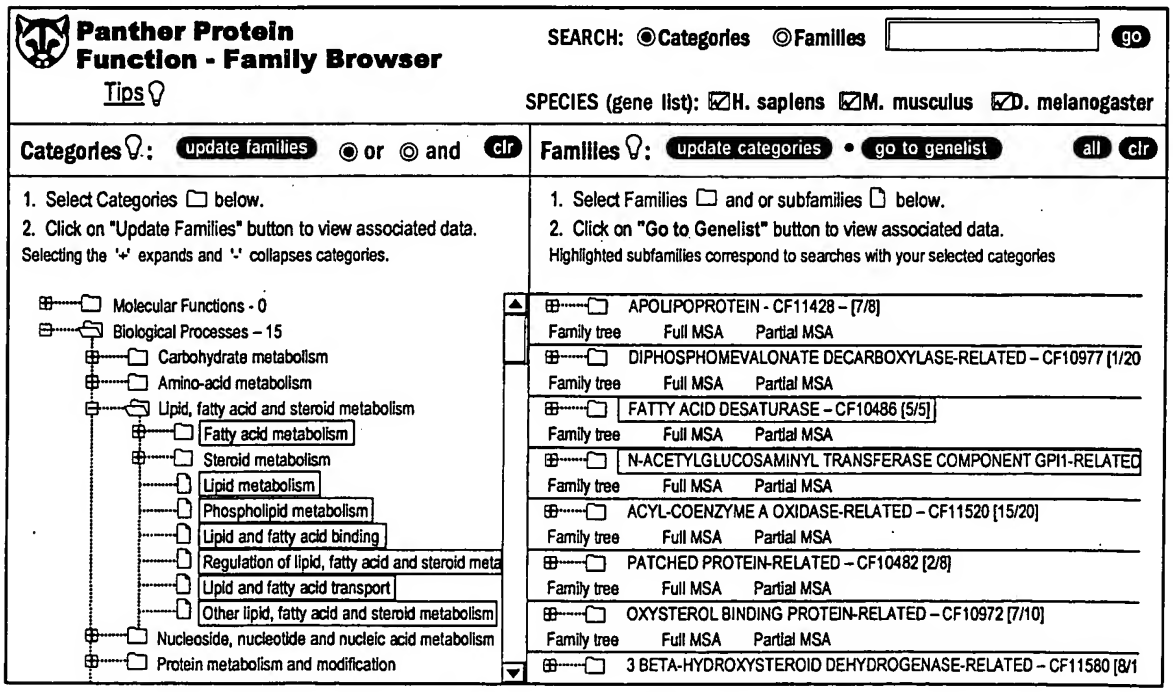

Panther Protein Function - Family Browser
Tips
SEARCH: Categories Families go
SPECIES (gene list): H. sapiens M. musculus D. melanogaster
Categories: update families or and clr
Families: update categories go to genelist all clr
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
1. Select Families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated data.
Highlighted subfamilies correspond to searches with your selected categories
Molecular Functions - 0
Biological Processes – 15
Carbohydrate metabolism
Amino-acid metabolism
Lipid, fatty acid and steroid metabolism
Fatty acid metabolism
Steroid metabolism
Lipid metabolism
Phospholipid metabolism
Lipid and fatty acid binding
Regulation of lipid, fatty acid and steroid meta
Lipid and fatty acid transport
Other lipid, fatty acid and steroid metabolism
Nucleoside, nucleotide and nucleic acid metabolism
Protein metabolism and modification
APOLIPOPROTEIN - CF11428 – [7/8]
Family tree Full MSA Partial MSA
DIPHOSPHOMEVALONATE DECARBOXYLASE-RELATED – CF10977 [1/20
Family tree Full MSA Partial MSA
FATTY ACID DESATURASE – CF10486 [5/5]
Family tree Full MSA Partial MSA
N-ACETYLGLUCOSAMINYL TRANSFERASE COMPONENT GPI1-RELATED
Family tree Full MSA Partial MSA
ACYL-COENZYME A OXIDASE-RELATED – CF11520 [15/20]
Family tree Full MSA Partial MSA
PATCHED PROTEIN-RELATED – CF10482 [2/8]
Family tree Full MSA Partial MSA
OXYSTEROL BINDING PROTEIN-RELATED – CF10972 [7/10]
Family tree Full MSA Partial MSA
3 BETA-HYDROXYSTEROID DEHYDROGENASE-RELATED – CF11580 [8/1

Fig. 18

Function Family Browser: Panther Gene List: HMM Score Cutoff (<): -35.0 Display: 30 update • export

• Sort results by selecting column title. Columns will sort in descending or ascending order.

clr all		ID-protein	Panther Best Hit – Panther ID family (CF#) or subfamily (SF#)	Panther Score/Relation		Species
☐	345.	gene1	ORPHAN NUCLEAR HORMONE RECEPTOR LRH (CF11154:SF208)	-641.6	•••	*H. sapiens*
☐	346.	gene2	ORPHAN NUCLEAR HORMONE RECEPTOR LRH (CF11154:SF208)	-641.51	•••	*H. sapiens*
☐	347.	gene3	RETINOIC ACID RECEPTOR RXR-ALPHA (CF11154:SF216)	-670.15	•••	*H. sapiens*
☐	348.	gene4	RETINOIC ACID RECEPTOR RXR-GAMMA (CF11154:SF217)	-623.86	•••	*H. sapiens*
☐	349.	gene5	RETINOIC ACID RECEPTOR RXR-BETA (CF11154:SF218)	-611.24	•••	*H. sapiens*
☐	350.	gene6	PHOSPHOLIPASE D1 (CF11198:SF4)	-2100.67	•••	*H. sapiens*
☐	351.	gene7	PHOSPHOLIPASE D2 (CF11198:SF5)	-2047.31	•••	*H. sapiens*
☐	352.	gene8	INOSITOL PHOSPHATASE SKIP (CF11200:SF21)	-361.22	•••	*H. sapiens*
☐	353.	gene9	INOSITOL PHOSPHATASE SKIP (CF11200:SF21)	-343.71	•••	*H. sapiens*
☐	354.	gene10	INOSITOL PHOSPHATASE SKIP-RELATED (CF11200:SF22)	-389.15	•••	*D. melanogaster*
☐	355.	gene11	INOSITOL PHOSPHATASE SKIP-RELATED (CF11200:SF22)	-354.86	•••	*D. melanogaster*
☐	356.	gene12	SPHINGOSINE PHOSPHATE LYASE-RELATED (CF11253:SF10)	-722.67	•••	*D. melanogaster*

Fig. 19

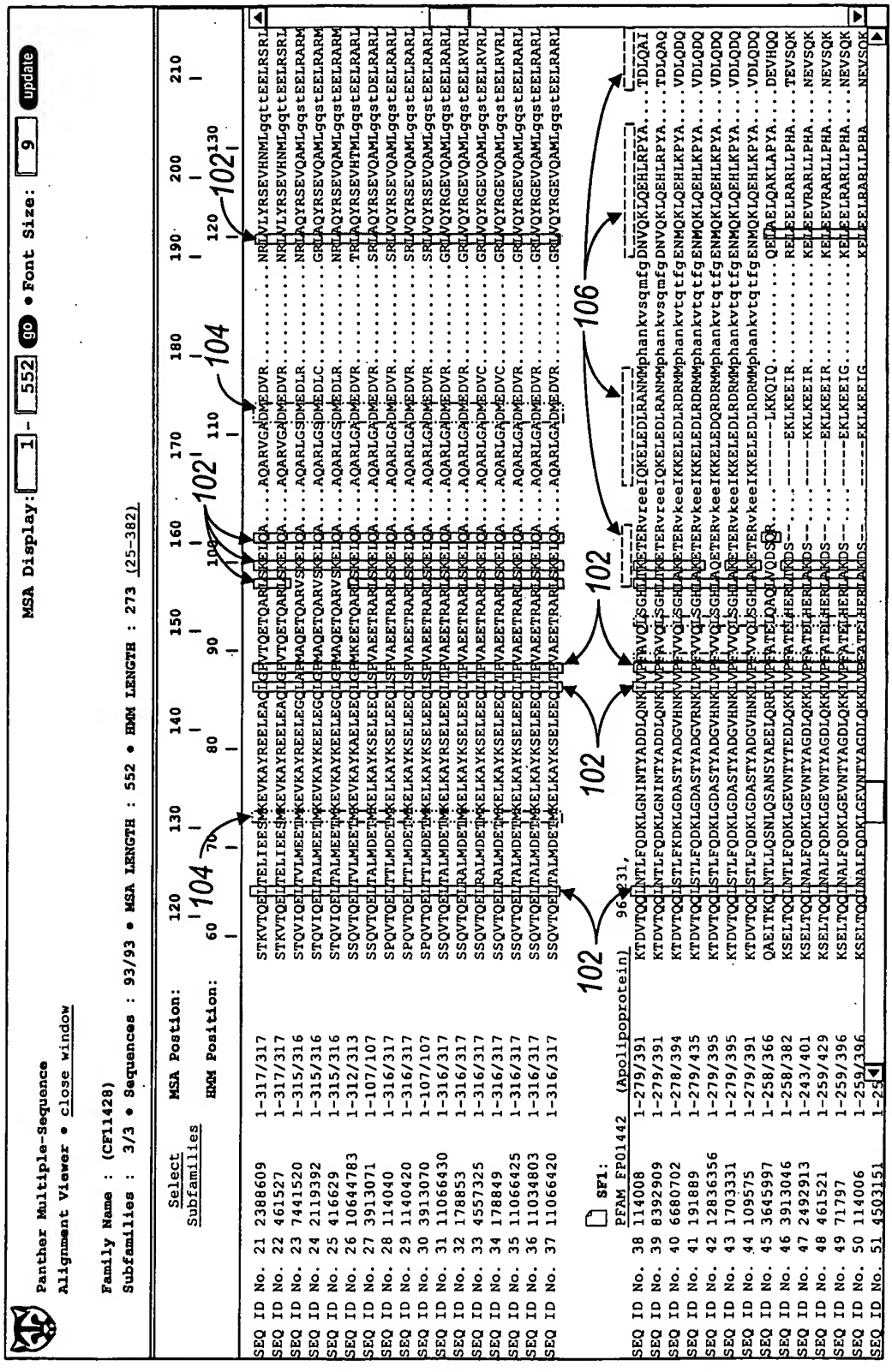

Panther Multiple-Sequence Alignment Viewer • close window
MSA Display: 1 - 552 go • Font Size: 9 update
Family Name : (CF11428)
Subfamilies : 3/3 • Sequences : 93/93 • MSA LENGTH : 552 • HMM LENGTH : 273 (25-382)
Select Subfamilies
MSA Postion:
HMM Position:
102
104
106
SF1:
PFAM FF01442 (Apolipoprotein)

Fig. 20

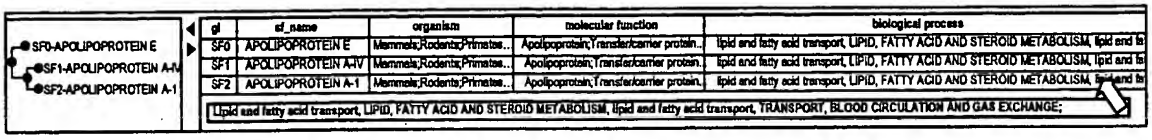
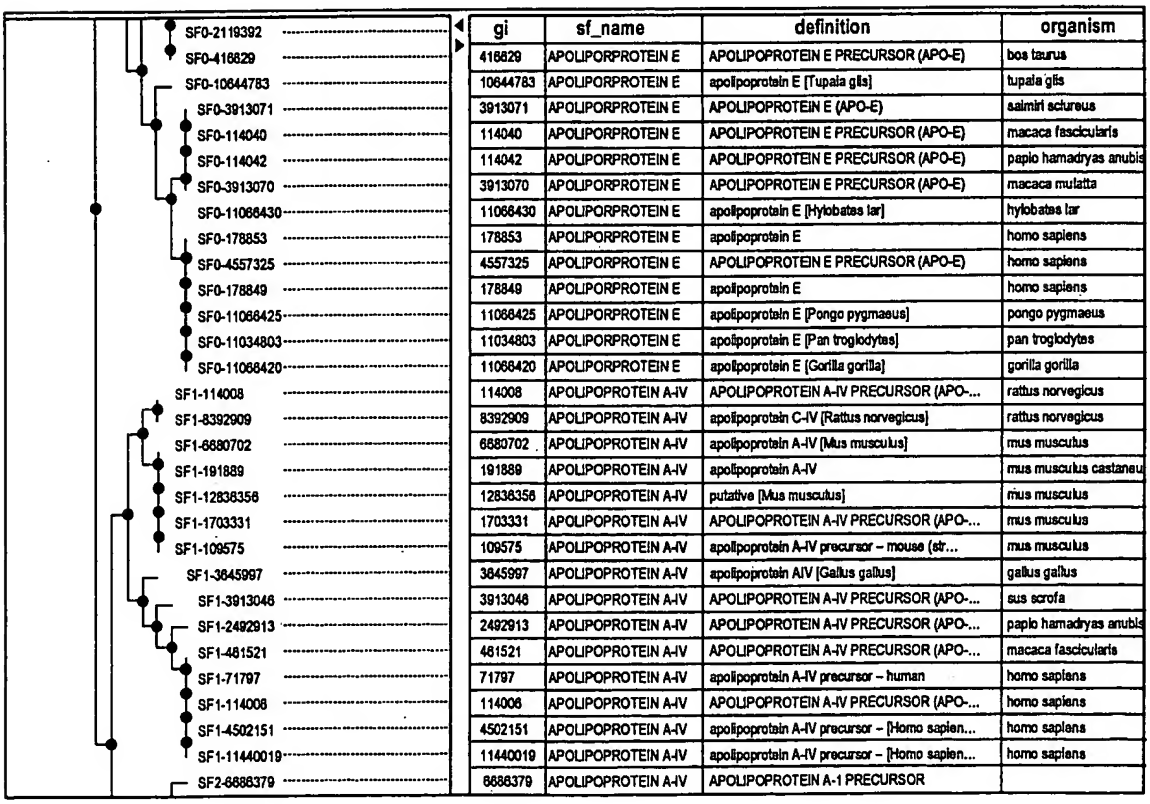
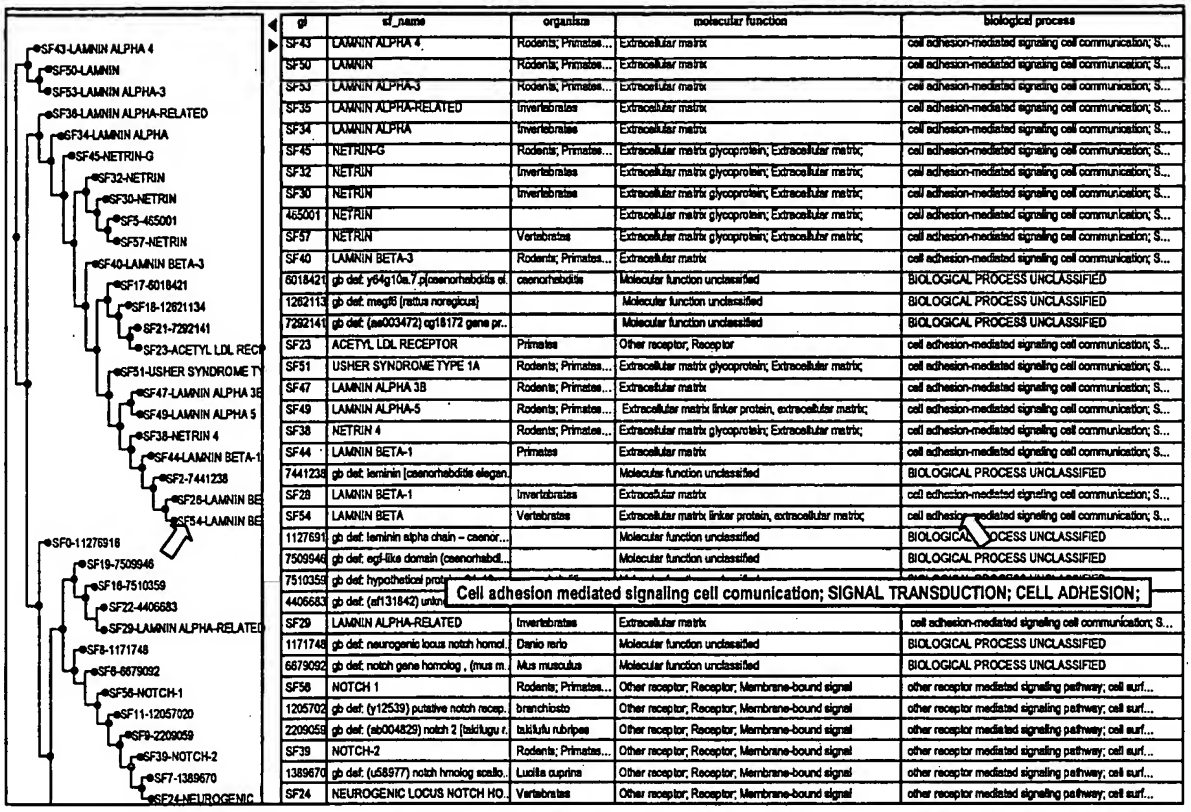


Fig. 21A



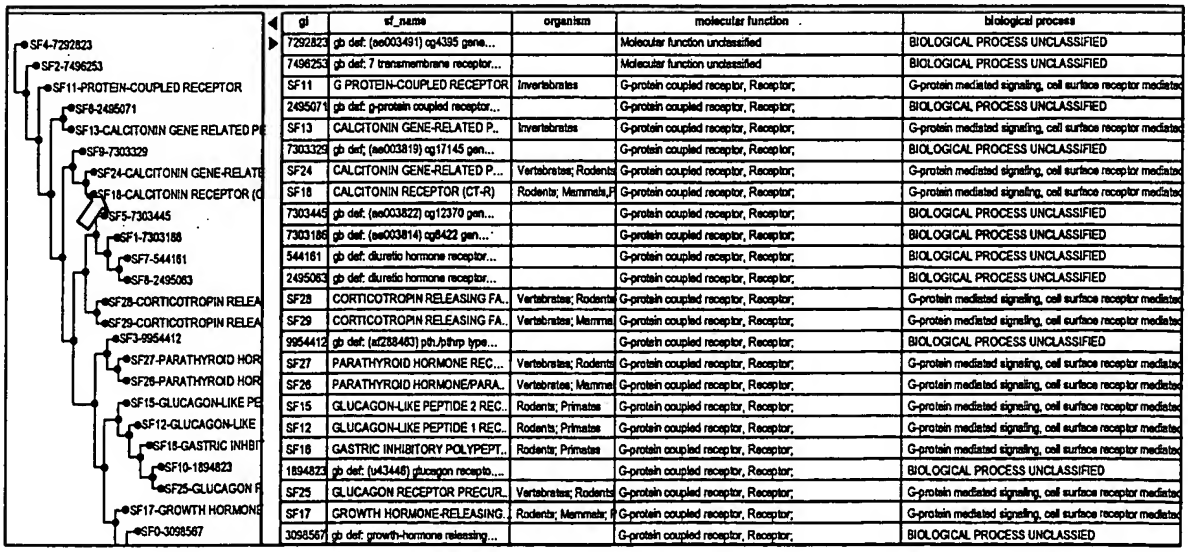
gi	sf_name	definition	organism
416829	APOLIPORPROTEIN E	APOLIPOPROTEIN E PRECURSOR (APO-E)	bos taurus
10644783	APOLIPORPROTEIN E	apolipoprotein E [Tupaia glis]	tupaia glis
3913071	APOLIPORPROTEIN E	APOLIPOPROTEIN E (APO-E)	saimiri sciureus
114040	APOLIPORPROTEIN E	APOLIPOPROTEIN E PRECURSOR (APO-E)	macaca fascicularis
114042	APOLIPORPROTEIN E	APOLIPOPROTEIN E PRECURSOR (APO-E)	papio hamadryas anubis
3913070	APOLIPORPROTEIN E	APOLIPOPROTEIN E PRECURSOR (APO-E)	macaca mulatta
11066430	APOLIPORPROTEIN E	apolipoprotein E [Hylobates lar]	hylobates lar
178853	APOLIPORPROTEIN E	apolipoprotein E	homo sapiens
4557325	APOLIPORPROTEIN E	APOLIPOPROTEIN E PRECURSOR (APO-E)	homo sapiens
178849	APOLIPORPROTEIN E	apolipoprotein E	homo sapiens
11066425	APOLIPORPROTEIN E	apolipoprotein E [Pongo pygmaeus]	pongo pygmaeus
11034803	APOLIPORPROTEIN E	apolipoprotein E [Pan troglodytes]	pan troglodytes
11066420	APOLIPORPROTEIN E	apolipoprotein E [Gorilla gorilla]	gorilla gorilla
114008	APOLIPOPROTEIN A-IV	APOLIPOPROTEIN A-IV PRECURSOR (APO-...	rattus norvegicus
8392909	APOLIPOPROTEIN A-IV	apolipoprotein C-IV [Rattus norvegicus]	rattus norvegicus
6680702	APOLIPOPROTEIN A-IV	apolipoprotein A-IV [Mus musculus]	mus musculus
191889	APOLIPOPROTEIN A-IV	apolipoprotein A-IV	mus musculus castaneu
12836356	APOLIPOPROTEIN A-IV	putative [Mus musculus]	mus musculus
1703331	APOLIPOPROTEIN A-IV	APOLIPOPROTEIN A-IV PRECURSOR (APO-...	mus musculus
109575	APOLIPOPROTEIN A-IV	apolipoprotein A-IV precursor – mouse (str...	mus musculus
3845997	APOLIPOPROTEIN A-IV	apolipoprotein AIV [Gallus gallus]	gallus gallus
3913046	APOLIPOPROTEIN A-IV	APOLIPOPROTEIN A-IV PRECURSOR (APO-...	sus scrofa
2492913	APOLIPOPROTEIN A-IV	APOLIPOPROTEIN A-IV PRECURSOR (APO-...	papio hamadryas anubis
481521	APOLIPOPROTEIN A-IV	APOLIPOPROTEIN A-IV PRECURSOR (APO-...	macaca fascicularis
71797	APOLIPOPROTEIN A-IV	apolipoprotein A-IV precursor – human	homo sapiens
114006	APOLIPOPROTEIN A-IV	APOLIPOPROTEIN A-IV PRECURSOR (APO-...	homo sapiens
4502151	APOLIPOPROTEIN A-IV	apolipoprotein A-IV precursor – [Homo sapien...	homo sapiens
11440019	APOLIPOPROTEIN A-IV	apolipoprotein A-IV precursor – [Homo sapien...	homo sapiens
6686379	APOLIPOPROTEIN A-IV	APOLIPOPROTEIN A-1 PRECURSOR	

Fig. 21B



gi	sf_name	organism	molecular function	biological process
SF43	LAMININ ALPHA 4	Rodents; Primates...	Extracellular matrix	cell adhesion-mediated signaling cell communication; S...
SF50	LAMININ	Rodents; Primates...	Extracellular matrix	cell adhesion-mediated signaling cell communication; S...
SF53	LAMININ ALPHA-3	Rodents; Primates...	Extracellular matrix	cell adhesion-mediated signaling cell communication; S...
SF35	LAMININ ALPHA-RELATED	Invertebrates	Extracellular matrix	cell adhesion-mediated signaling cell communication; S...
SF34	LAMININ ALPHA	Invertebrates	Extracellular matrix	cell adhesion-mediated signaling cell communication; S...
SF45	NETRIN-G	Rodents; Primates...	Extracellular matrix glycoprotein; Extracellular matrix;	cell adhesion-mediated signaling cell communication; S...
SF32	NETRIN	Invertebrates	Extracellular matrix glycoprotein; Extracellular matrix;	cell adhesion-mediated signaling cell communication; S...
SF30	NETRIN	Invertebrates	Extracellular matrix glycoprotein; Extracellular matrix;	cell adhesion-mediated signaling cell communication; S...
465001	NETRIN		Extracellular matrix glycoprotein; Extracellular matrix;	cell adhesion-mediated signaling cell communication; S...
SF57	NETRIN	Vertebrates	Extracellular matrix glycoprotein; Extracellular matrix;	cell adhesion-mediated signaling cell communication; S...
SF40	LAMININ BETA-3	Rodents; Primates...	Extracellular matrix	cell adhesion-mediated signaling cell communication; S...
6018421	gb def: y64g10a.7 p[caenorhabditis el	caenorhabditis	Molecular function unclassified	BIOLOGICAL PROCESS UNCLASSIFIED
1262113	gb def: mag6 [rattus norvegicus]		Molecular function unclassified	BIOLOGICAL PROCESS UNCLASSIFIED
7292141	gb def: (ae003472) cg18172 gene pr...		Molecular function unclassified	BIOLOGICAL PROCESS UNCLASSIFIED
SF23	ACETYL LDL RECEPTOR	Primates	Other receptor; Receptor	cell adhesion-mediated signaling cell communication; S...
SF51	USHER SYNDROME TYPE 1A	Rodents; Primates...	Extracellular matrix glycoprotein; Extracellular matrix;	cell adhesion-mediated signaling cell communication; S...
SF47	LAMININ ALPHA 3B	Rodents; Primates...	Extracellular matrix	cell adhesion-mediated signaling cell communication; S...
SF49	LAMININ ALPHA-5	Rodents; Primates...	Extracellular matrix linker protein, extracellular matrix;	cell adhesion-mediated signaling cell communication; S...
SF38	NETRIN 4	Rodents; Primates...	Extracellular matrix glycoprotein; Extracellular matrix;	cell adhesion-mediated signaling cell communication; S...
SF44	LAMININ BETA-1	Primates	Extracellular matrix	cell adhesion-mediated signaling cell communication; S...
7441238	gb def: leminin [caenorhabditis elegan.		Molecular function unclassified	BIOLOGICAL PROCESS UNCLASSIFIED
SF28	LAMININ BETA-1	Invertebrates	Extracellular matrix	cell adhesion-mediated signaling cell communication; S...
SF54	LAMININ BETA	Vertebrates	Extracellular matrix linker protein, extracellular matrix;	cell adhesion-mediated signaling cell communication; S...
1127691	gb def: leminin alpha chain – caenor...		Molecular function unclassified	BIOLOGICAL PROCESS UNCLASSIFIED
7509946	gb def: egf-like domain (caenorhabdl...		Molecular function unclassified	BIOLOGICAL PROCESS UNCLASSIFIED
7510359	gb def: hypothetical prot...			
4406683	gb def: (af131842) untn...			
SF29	LAMININ ALPHA-RELATED	Invertebrates	Extracellular matrix	cell adhesion-mediated signaling cell communication; S...
1171748	gb def: neurogenic locus notch homol.	Danio rerio	Molecular function unclassified	BIOLOGICAL PROCESS UNCLASSIFIED
6679092	gb def: notch gene homolog , (mus m..	Mus musculus	Molecular function unclassified	BIOLOGICAL PROCESS UNCLASSIFIED
SF56	NOTCH 1	Rodents; Primates...	Other receptor; Receptor; Membrane-bound signal	other receptor mediated signaling pathway; cell surf...
1205702	gb def: (y12539) putative notch recep..	branchiosto	Other receptor; Receptor; Membrane-bound signal	other receptor mediated signaling pathway; cell surf...
2209059	gb def: (ab004829) notch 2 [takifugu r.	takifufu rubripes	Other receptor; Receptor; Membrane-bound signal	other receptor mediated signaling pathway; cell surf...
SF39	NOTCH-2	Rodents; Primates...	Other receptor; Receptor; Membrane-bound signal	other receptor mediated signaling pathway; cell surf...
1389670	gb def: (u58977) notch hmolog scallo..	Lucilia cuprina	Other receptor; Receptor; Membrane-bound signal	other receptor mediated signaling pathway; cell surf...
SF24	NEUROGENIC LOCUS NOTCH HO..	Vertebrates	Other receptor; Receptor; Membrane-bound signal	other receptor mediated signaling pathway; cell surf...

Fig. 22A



gi	sf_name	organism	molecular function	biological process
7292823	gb def: (ae003491) cg4395 gene...		Molecular function unclassified	BIOLOGICAL PROCESS UNCLASSIFIED
7496253	gb def: 7 transmembrane receptor...		Molecular function unclassified	BIOLOGICAL PROCESS UNCLASSIFIED
SF11	G PROTEIN-COUPLED RECEPTOR	Invertebrates	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
2495071	gb def: g-protein coupled receptor...		G-protein coupled receptor, Receptor;	BIOLOGICAL PROCESS UNCLASSIFIED
SF13	CALCITONIN GENE-RELATED P..	Invertebrates	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
7303329	gb def: (ae003819) cg17145 gen...		G-protein coupled receptor, Receptor;	BIOLOGICAL PROCESS UNCLASSIFIED
SF24	CALCITONIN GENE-RELATED P...	Vertebrates; Rodents	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
SF18	CALCITONIN RECEPTOR (CT-R)	Rodents; Mammals,R	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
7303445	gb def: (ae003822) cg12370 gen...		G-protein coupled receptor, Receptor;	BIOLOGICAL PROCESS UNCLASSIFIED
7303186	gb def: (ae003814) cg8422 gen...		G-protein coupled receptor, Receptor;	BIOLOGICAL PROCESS UNCLASSIFIED
544161	gb def: diuretic hormone receptor...		G-protein coupled receptor, Receptor;	BIOLOGICAL PROCESS UNCLASSIFIED
2495063	gb def: diuretic hormone receptor...		G-protein coupled receptor, Receptor;	BIOLOGICAL PROCESS UNCLASSIFIED
SF28	CORTICOTROPIN RELEASING FA..	Vertebrates; Rodents	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
SF29	CORTICOTROPIN RELEASING FA..	Vertebrates; Mamma	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
9954412	gb def: (af288463) pth/pthrp type...		G-protein coupled receptor, Receptor;	BIOLOGICAL PROCESS UNCLASSIFIED
SF27	PARATHYROID HORMONE REC...	Vertebrates; Rodents	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
SF26	PARATHYROID HORMONE/PARA..	Vertebrates; Mamma	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
SF15	GLUCAGON-LIKE PEPTIDE 2 REC..	Rodents; Primates	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
SF12	GLUCAGON-LIKE PEPTIDE 1 REC..	Rodents; Primates	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
SF16	GASTRIC INHIBITORY POLYPEPT..	Rodents; Primates	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
1894823	gb def: (u43446) glucagon recepto....		G-protein coupled receptor, Receptor;	BIOLOGICAL PROCESS UNCLASSIFIED
SF25	GLUCAGON RECEPTOR PRECUR..	Vertebrates; Rodents	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
SF17	GROWTH HORMONE-RELEASING..	Rodents; Mammals; R	G-protein coupled receptor, Receptor;	G-protein mediated signaling, cell surface receptor mediated
3098567	gb def: growth-hormone releasing...		G-protein coupled receptor, Receptor;	BIOLOGICAL PROCESS UNCLASSIED

Fig. 22B

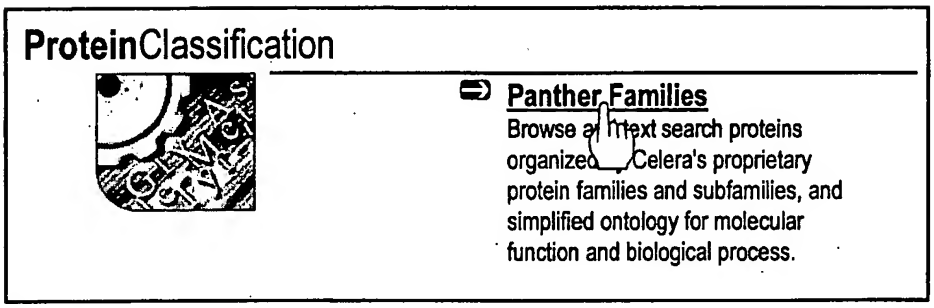

ProteinClassification
Panther Families
Browse and text search proteins organized by Celera's proprietary protein families and subfamilies, and simplified ontology for molecular function and biological process.

Fig. 23

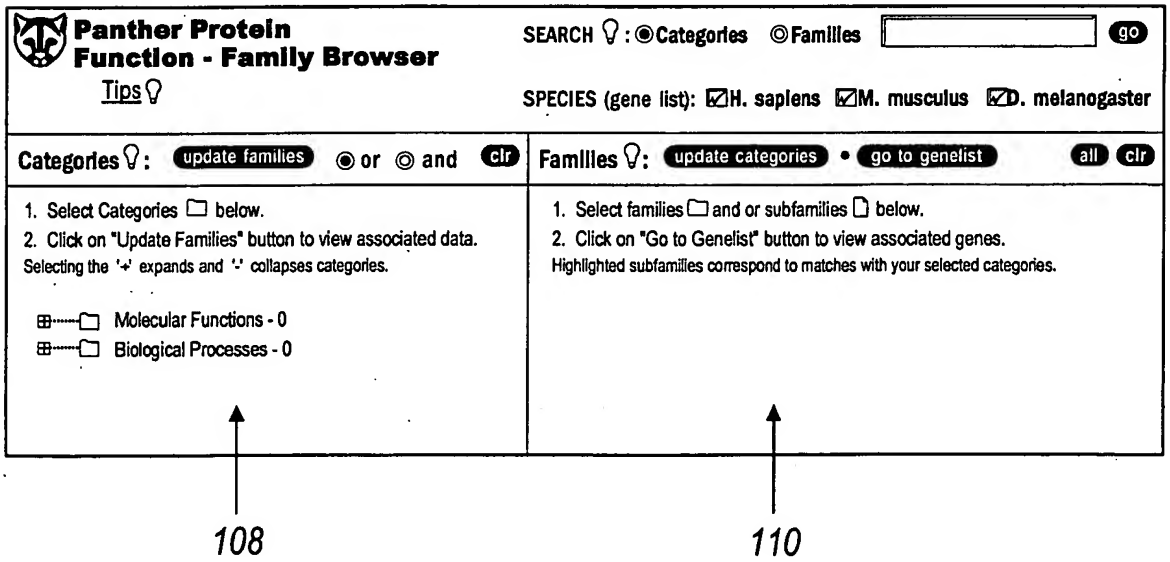

Panther Protein Function - Family Browser
Tips
SEARCH : Categories Families go
SPECIES (gene list): H. sapiens M. musculus D. melanogaster
Categories : update families or and clr
Families : update categories go to genelist all clr
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
Molecular Functions - 0
Biological Processes - 0
1. Select families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated genes.
Highlighted subfamilies correspond to matches with your selected categories.
108
110

Fig. 24

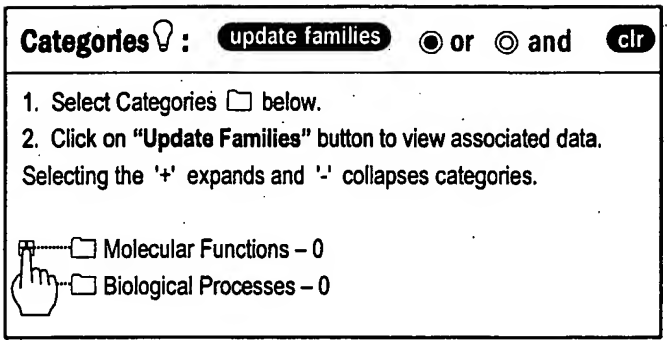

Categories :
update families
or
and
clr
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
Molecular Functions – 0
Biological Processes – 0

Fig. 25

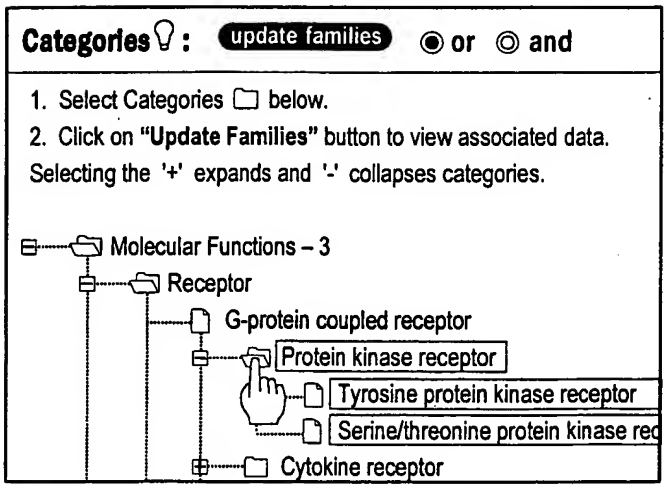

Categories :
update families
or
and
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
Molecular Functions – 3
Receptor
G-protein coupled receptor
Protein kinase receptor
Tyrosine protein kinase receptor
Serine/threonine protein kinase rec
Cytokine receptor

Fig. 26

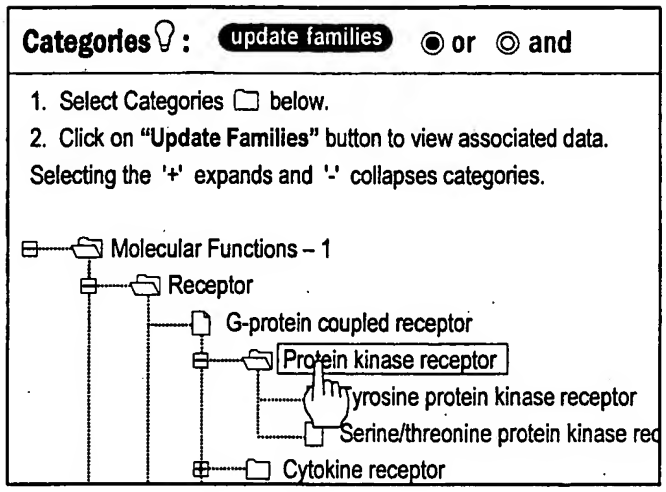

Categories:
update families
or
and
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
Molecular Functions – 1
Receptor
G-protein coupled receptor
Protein kinase receptor
Tyrosine protein kinase receptor
Serine/threonine protein kinase rec
Cytokine receptor

Fig. 27

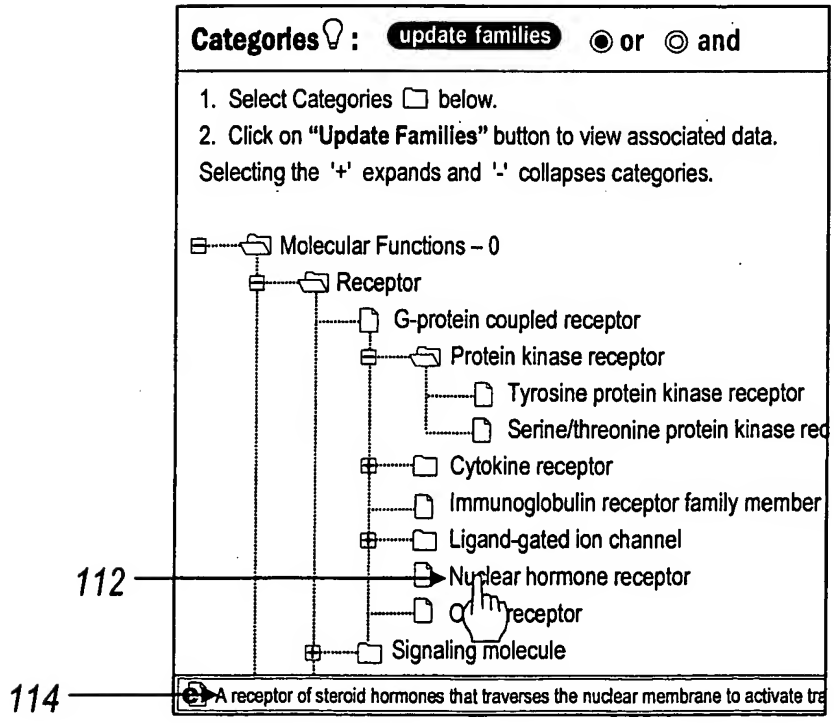

Categories:
update families
or
and
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
Molecular Functions – 0
Receptor
G-protein coupled receptor
Protein kinase receptor
Tyrosine protein kinase receptor
Serine/threonine protein kinase rec
Cytokine receptor
Immunoglobulin receptor family member
Ligand-gated ion channel
Nuclear hormone receptor
receptor
Signaling molecule
A receptor of steroid hormones that traverses the nuclear membrane to activate tra
112
114

Fig. 28

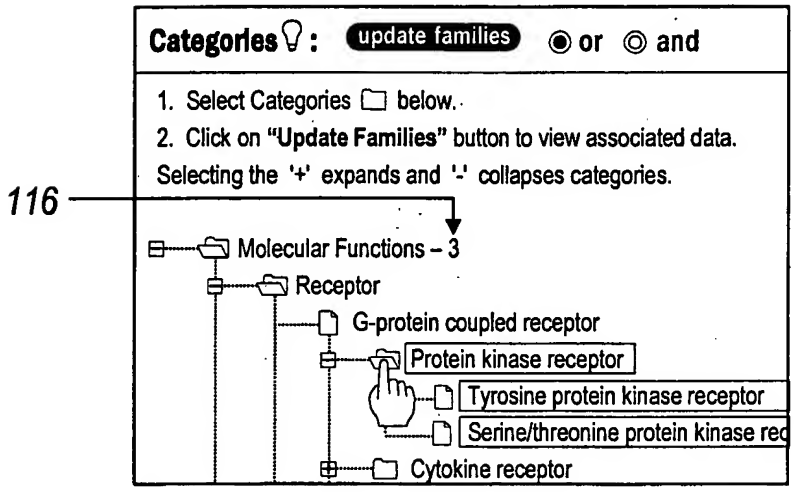

Categories :
update families
or
and
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
116
Molecular Functions – 3
Receptor
G-protein coupled receptor
Protein kinase receptor
Tyrosine protein kinase receptor
Serine/threonine protein kinase rec
Cytokine receptor

Fig. 29

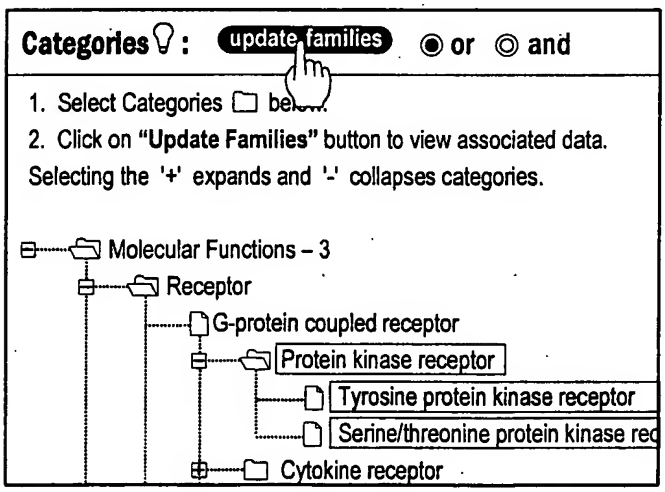

Categories :
update families
or
and
1. Select Categories
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
Molecular Functions – 3
Receptor
G-protein coupled receptor
Protein kinase receptor
Tyrosine protein kinase receptor
Serine/threonine protein kinase rec
Cytokine receptor

Fig. 30

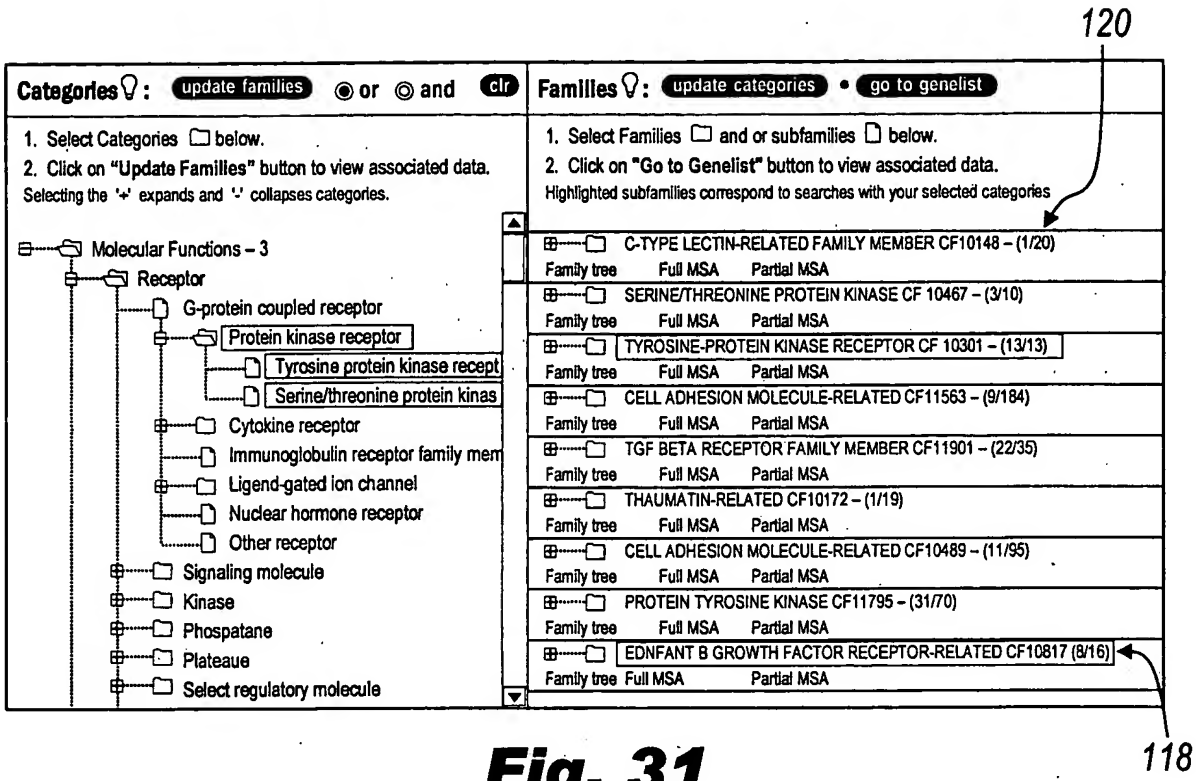

120
Categories: update families ◉ or ◎ and clr
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
Molecular Functions – 3
Receptor
G-protein coupled receptor
Protein kinase receptor
Tyrosine protein kinase recept
Serine/threonine protein kinas
Cytokine receptor
Immunoglobulin receptor family mem
Ligend-gated ion channel
Nuclear hormone receptor
Other receptor
Signaling molecule
Kinase
Phospatane
Plateaue
Select regulatory molecule
Families: update categories • go to genelist
1. Select Families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated data.
Highlighted subfamilies correspond to searches with your selected categories
C-TYPE LECTIN-RELATED FAMILY MEMBER CF10148 – (1/20)
Family tree Full MSA Partial MSA
SERINE/THREONINE PROTEIN KINASE CF 10467 – (3/10)
Family tree Full MSA Partial MSA
TYROSINE-PROTEIN KINASE RECEPTOR CF 10301 – (13/13)
Family tree Full MSA Partial MSA
CELL ADHESION MOLECULE-RELATED CF11563 – (9/184)
Family tree Full MSA Partial MSA
TGF BETA RECEPTOR FAMILY MEMBER CF11901 – (22/35)
Family tree Full MSA Partial MSA
THAUMATIN-RELATED CF10172 – (1/19)
Family tree Full MSA Partial MSA
CELL ADHESION MOLECULE-RELATED CF10489 – (11/95)
Family tree Full MSA Partial MSA
PROTEIN TYROSINE KINASE CF11795 – (31/70)
Family tree Full MSA Partial MSA
EDNFANT B GROWTH FACTOR RECEPTOR-RELATED CF10817 (8/16)
Family tree Full MSA Partial MSA
118

Fig. 31

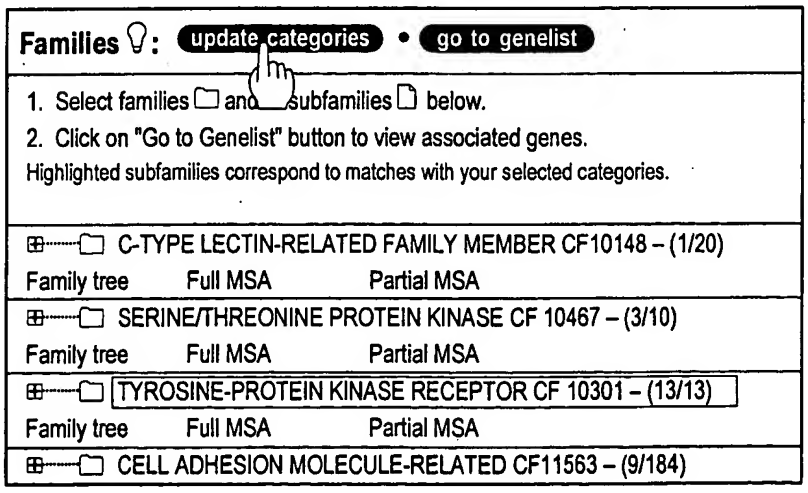

Families: update categories • go to genelist
1. Select families and subfamilies below.
2. Click on "Go to Genelist" button to view associated genes.
Highlighted subfamilies correspond to matches with your selected categories.
C-TYPE LECTIN-RELATED FAMILY MEMBER CF10148 – (1/20)
Family tree Full MSA Partial MSA
SERINE/THREONINE PROTEIN KINASE CF 10467 – (3/10)
Family tree Full MSA Partial MSA
TYROSINE-PROTEIN KINASE RECEPTOR CF 10301 – (13/13)
Family tree Full MSA Partial MSA
CELL ADHESION MOLECULE-RELATED CF11563 – (9/184)

Fig. 32

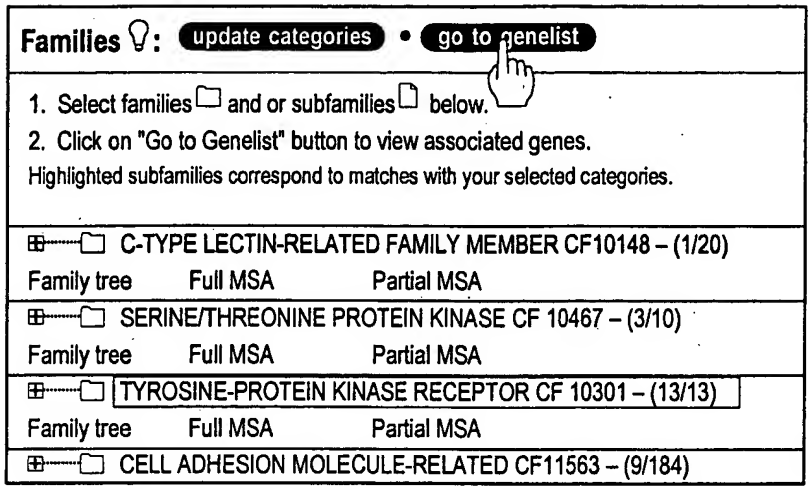

Families
update categories
go to genelist
1. Select families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated genes.
Highlighted subfamilies correspond to matches with your selected categories.
C-TYPE LECTIN-RELATED FAMILY MEMBER CF10148 – (1/20)
Family tree
Full MSA
Partial MSA
SERINE/THREONINE PROTEIN KINASE CF 10467 – (3/10)
Family tree
Full MSA
Partial MSA
TYROSINE-PROTEIN KINASE RECEPTOR CF 10301 – (13/13)
Family tree
Full MSA
Partial MSA
CELL ADHESION MOLECULE-RELATED CF11563 – (9/184)

Fig. 33

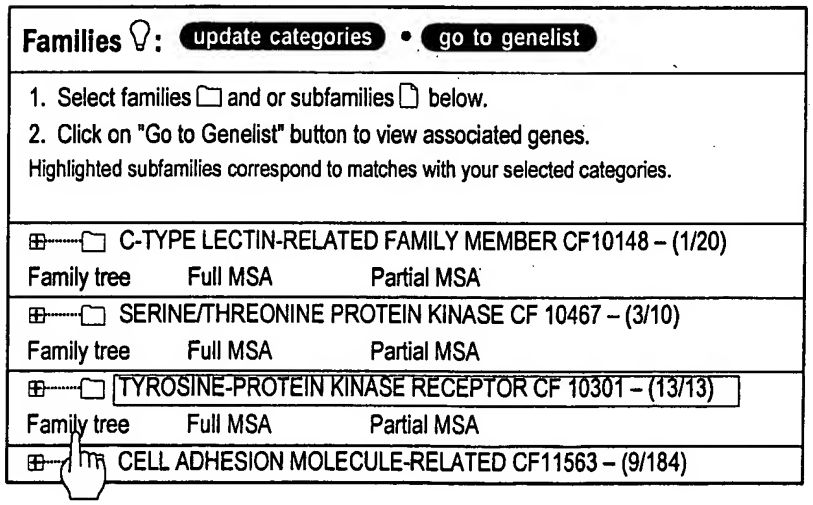

Families
update categories
go to genelist
1. Select families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated genes.
Highlighted subfamilies correspond to matches with your selected categories.
C-TYPE LECTIN-RELATED FAMILY MEMBER CF10148 – (1/20)
Family tree
Full MSA
Partial MSA
SERINE/THREONINE PROTEIN KINASE CF 10467 – (3/10)
Family tree
Full MSA
Partial MSA
TYROSINE-PROTEIN KINASE RECEPTOR CF 10301 – (13/13)
Family tree
Full MSA
Partial MSA
CELL ADHESION MOLECULE-RELATED CF11563 – (9/184)

Fig. 34

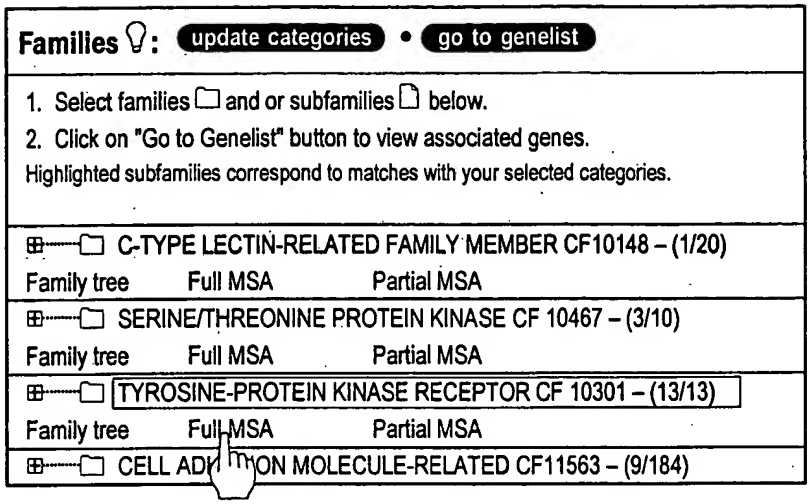

Families:
update categories
go to genelist
1. Select families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated genes.
Highlighted subfamilies correspond to matches with your selected categories.
C-TYPE LECTIN-RELATED FAMILY MEMBER CF10148 – (1/20)
Family tree
Full MSA
Partial MSA
SERINE/THREONINE PROTEIN KINASE CF 10467 – (3/10)
Family tree
Full MSA
Partial MSA
TYROSINE-PROTEIN KINASE RECEPTOR CF 10301 – (13/13)
Family tree
Full MSA
Partial MSA
CELL ADHESION MOLECULE-RELATED CF11563 – (9/184)

Fig. 35

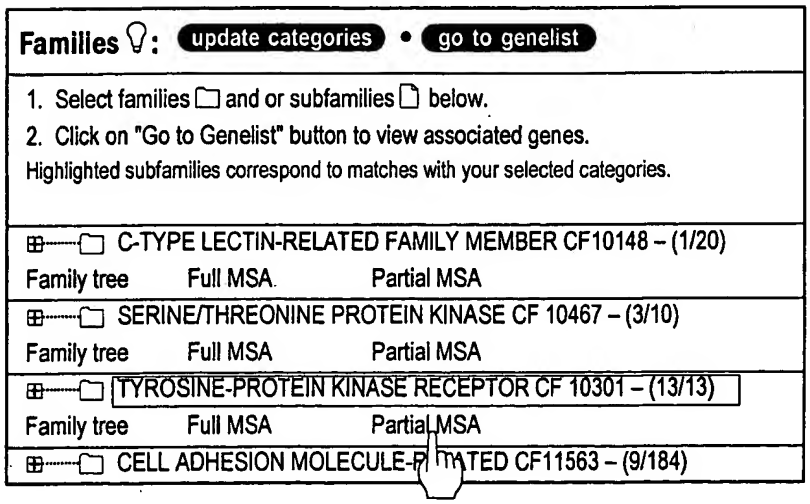

Families:
update categories
go to genelist
1. Select families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated genes.
Highlighted subfamilies correspond to matches with your selected categories.
C-TYPE LECTIN-RELATED FAMILY MEMBER CF10148 – (1/20)
Family tree
Full MSA
Partial MSA
SERINE/THREONINE PROTEIN KINASE CF 10467 – (3/10)
Family tree
Full MSA
Partial MSA
TYROSINE-PROTEIN KINASE RECEPTOR CF 10301 – (13/13)
Family tree
Full MSA
Partial MSA
CELL ADHESION MOLECULE-RELATED CF11563 – (9/184)

Fig. 36

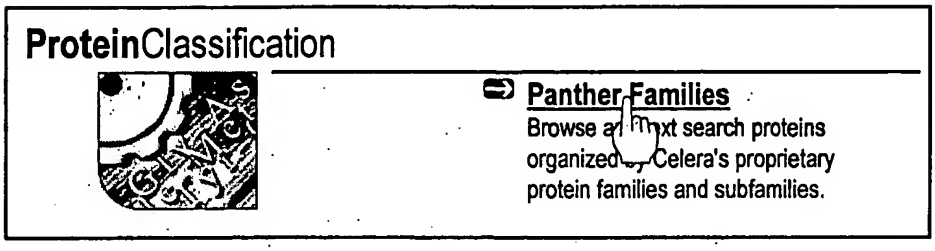

ProteinClassification
Panther Families
Browse and/or text search proteins organized by Celera's proprietary protein families and subfamilies.

Fig. 37

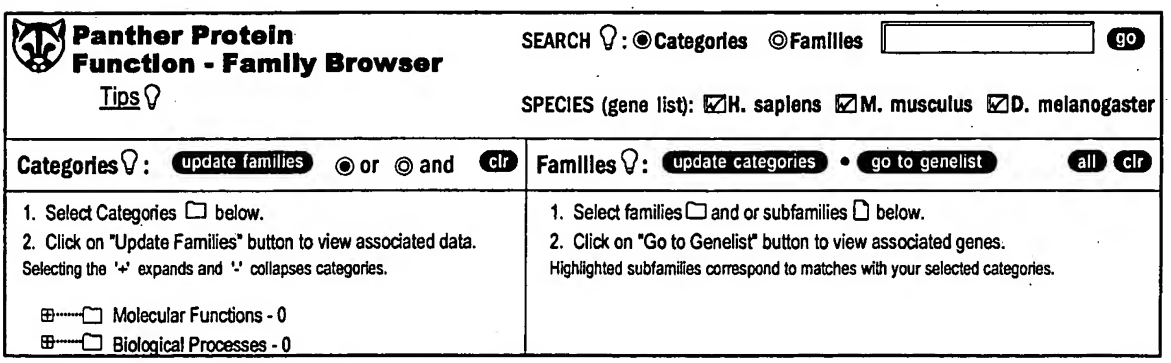

Panther Protein Function - Family Browser
Tips
SEARCH : Categories Families go
SPECIES (gene list): H. sapiens M. musculus D. melanogaster
Categories : update families or and clr
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
Molecular Functions - 0
Biological Processes - 0
Families : update categories go to genelist all clr
1. Select families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated genes.
Highlighted subfamilies correspond to matches with your selected categories.

Fig. 38

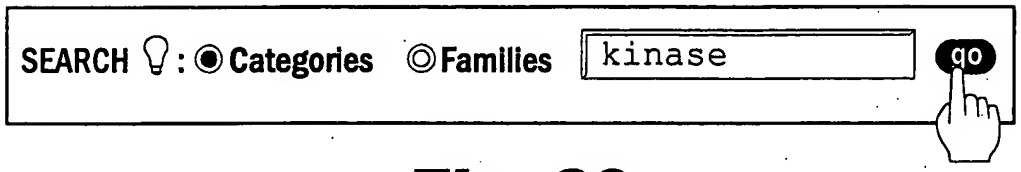

SEARCH
: ◉ Categories
◎ Families
kinase
go

Fig. 39

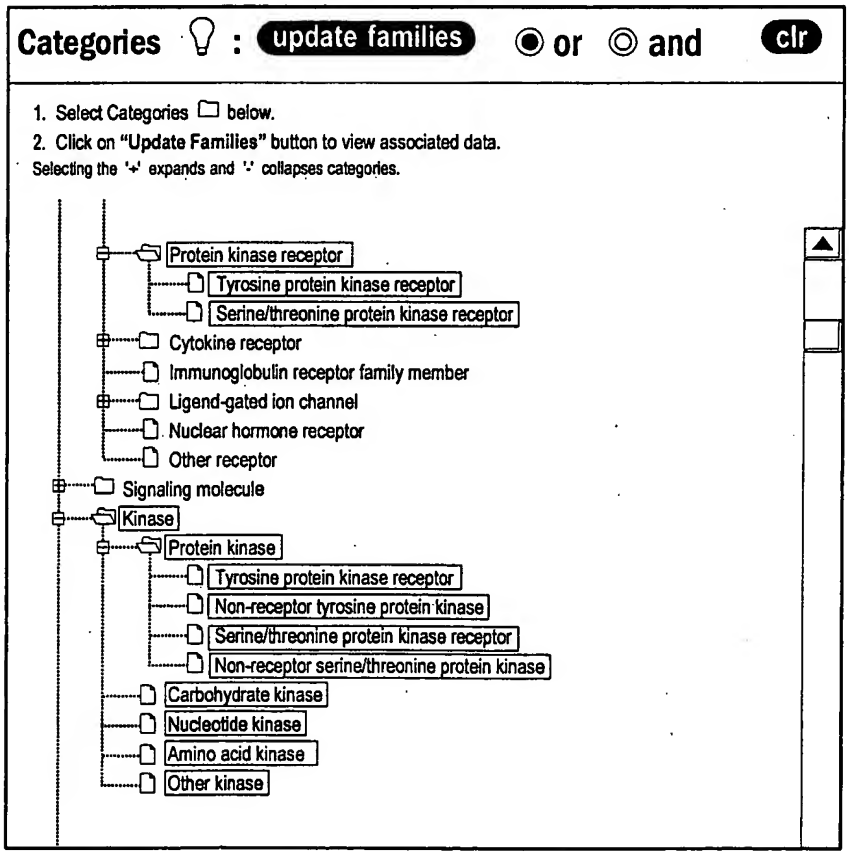

Categories
: update families
◉ or
◎ and
clr
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
Protein kinase receptor
Tyrosine protein kinase receptor
Serine/threonine protein kinase receptor
Cytokine receptor
Immunoglobulin receptor family member
Ligend-gated ion channel
Nuclear hormone receptor
Other receptor
Signaling molecule
Kinase
Protein kinase
Tyrosine protein kinase receptor
Non-receptor tyrosine protein kinase
Serine/threonine protein kinase receptor
Non-receptor serine/threonine protein kinase
Carbohydrate kinase
Nucleotide kinase
Amino acid kinase
Other kinase

Fig. 40

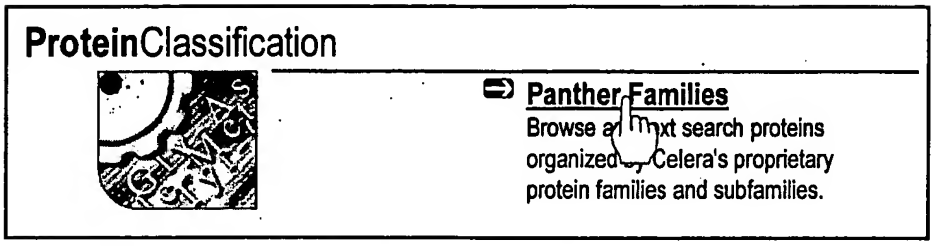

ProteinClassification
Panther Families
Browse and search proteins
organized by Celera's proprietary
protein families and subfamilies.

Fig. 41

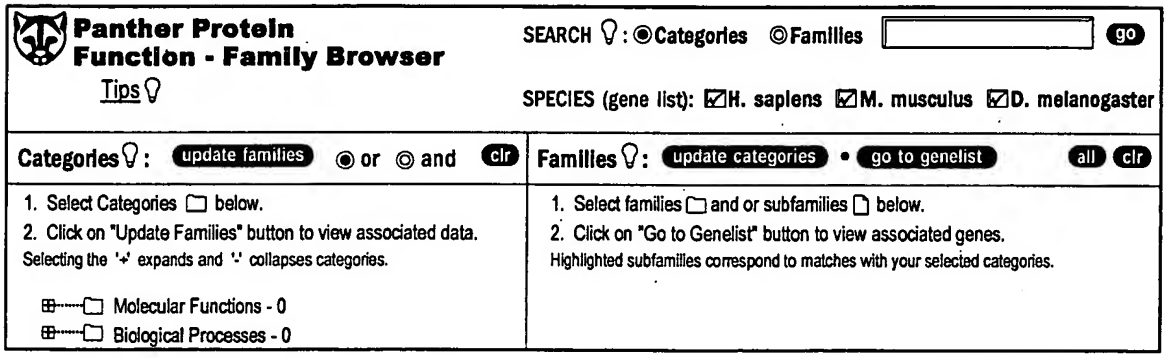

Panther Protein
Function - Family Browser
Tips
SEARCH : Categories Families go
SPECIES (gene list): H. sapiens M. musculus D. melanogaster
Categories : update families or and clr
1. Select Categories below.
2. Click on "Update Families" button to view associated data.
Selecting the '+' expands and '-' collapses categories.
Molecular Functions - 0
Biological Processes - 0
Families : update categories go to genelist all clr
1. Select families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated genes.
Highlighted subfamilies correspond to matches with your selected categories.

Fig. 42

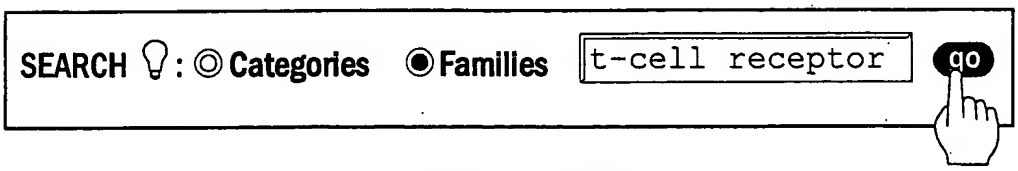

SEARCH
Categories
Families
t-cell receptor
go

Fig. 43

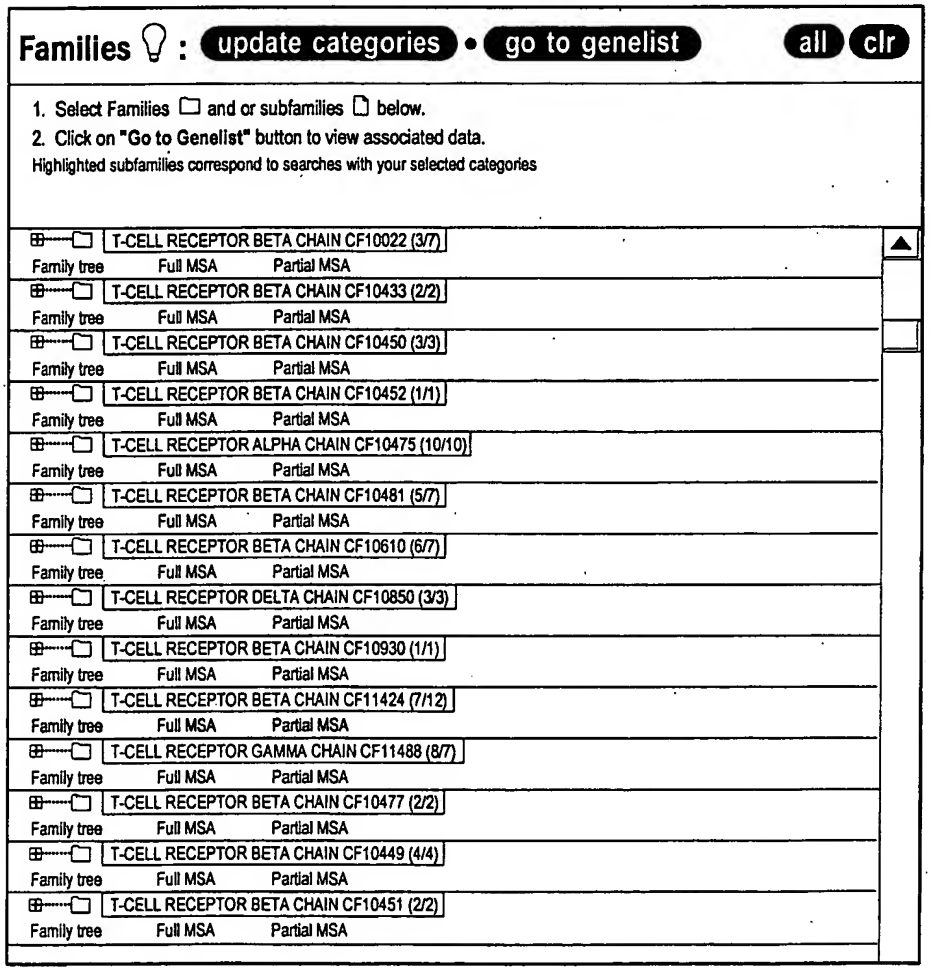

Families
update categories
go to genelist
all
clr
1. Select Families and or subfamilies below.
2. Click on "Go to Genelist" button to view associated data.
Highlighted subfamilies correspond to searches with your selected categories
T-CELL RECEPTOR BETA CHAIN CF10022 (3/7)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR BETA CHAIN CF10433 (2/2)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR BETA CHAIN CF10450 (3/3)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR BETA CHAIN CF10452 (1/1)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR ALPHA CHAIN CF10475 (10/10)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR BETA CHAIN CF10481 (5/7)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR BETA CHAIN CF10610 (6/7)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR DELTA CHAIN CF10850 (3/3)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR BETA CHAIN CF10930 (1/1)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR BETA CHAIN CF11424 (7/12)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR GAMMA CHAIN CF11488 (8/7)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR BETA CHAIN CF10477 (2/2)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR BETA CHAIN CF10449 (4/4)
Family tree Full MSA Partial MSA
T-CELL RECEPTOR BETA CHAIN CF10451 (2/2)
Family tree Full MSA Partial MSA

Fig. 44

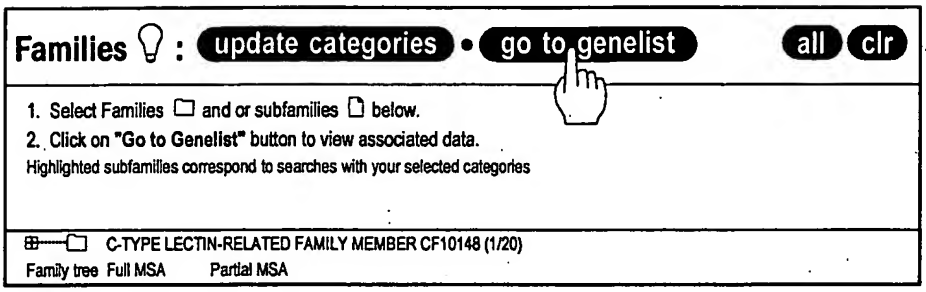


Fig. 45

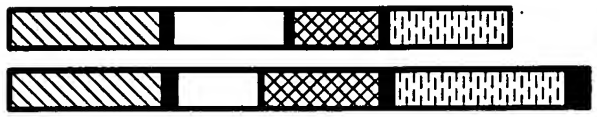
Function Family Browser: **Protein Families** : HMM Score Cutoff (<): -35.0 Display: 20 update • export

Hits 1-10 of 5414 [page: (1) 2 3 4 5 6]

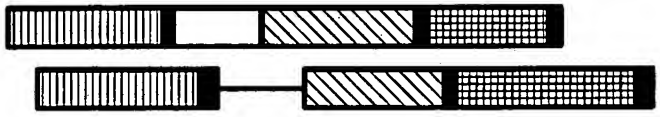
• Sort results by selecting column title. Columns will sort in descending or ascending order.

clr all		ID-protein	Panther Best Hit – Panther ID family (CF#) or subfamily (SF#)	Panther Score/Relation		Species
☐	1.	hCP43060	BONE MORPHOGENETIC PROTEIN RECEPTOR TYPE 1A (CF1...	-1071.90	•••	*H. sapiens*
☐	2.	hCP20073	ACTIVIN RECEPTOR TYPE I (CF11901-SF30)	-1068.05	•••	*M. musculus*
☐	3.	hCP5773	TGF-BETA RECEPTOR TYPE I (CF11901-SF28)	-1046.96	•••	*M. musculus*
☐	4.	hCP44799	TGF-BETA RECEPTOR TYPE I (CF11901-SF26)	-1043.75	•••	*H. sapiens*
☐	5.	hCP9004	SERINE/THEONINE-PROTEIN KINASE RECEPTOR R3 (CF1190...	-1004.39	•••	*M. musculus*
☐	6.	hCP18779	TYROSINE-PROTEIN KINASE 7-RELATED (CF11901-SF167)	-1004.39	•••	*M. musculus*
☐	7.	hCP20049	ACTIVIN RECEPTOR-LINE KINASE 7 (CF11901-SF20)	-1024.83	•••	*M. musculus*
☐	8.	hCP18624	TGF-BETA RECEPTOR TYPE II (CF11901-SF22)	-1002.02	•••	*M. musculus*
☐	9.	hCP20668	BONE MORPHOGENETIC PROTEIN RECEPTOR TYPE IA (CF1...	-864.3	•••	*M. musculus*
☐	10.	hCP51898	ACTIVIN RECEPTOR TYPE IB (CF11901-SF28)	-980.95	•••	*H. sapiens*
☐	11.	hCP39834	ACTIVIN RECEPTOR TYPE II (CF11901-SF21)	-689.85	•••	*H. sapiens*

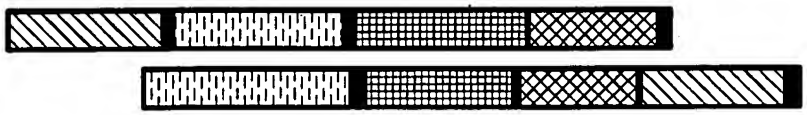
Fig. 46



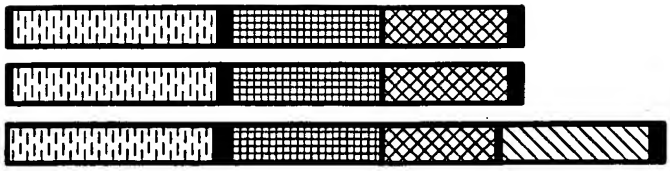
FAMILY A



FAMILY B



FAMILY C



FAMILY D

Fig. 47

188,000
PROTEIN SEQUENCES
(filtered GenBank NR)
MSA HMM TREE
2,200 PROTEIN
FAMILY CLUSTERS
Biologist curation
40,000 SUBFAMILIES
Labeled by
Biologically-relevant name
Classified into categories
Of two ontologies:
-Molecular function-
-Biological process-

Fig. 48

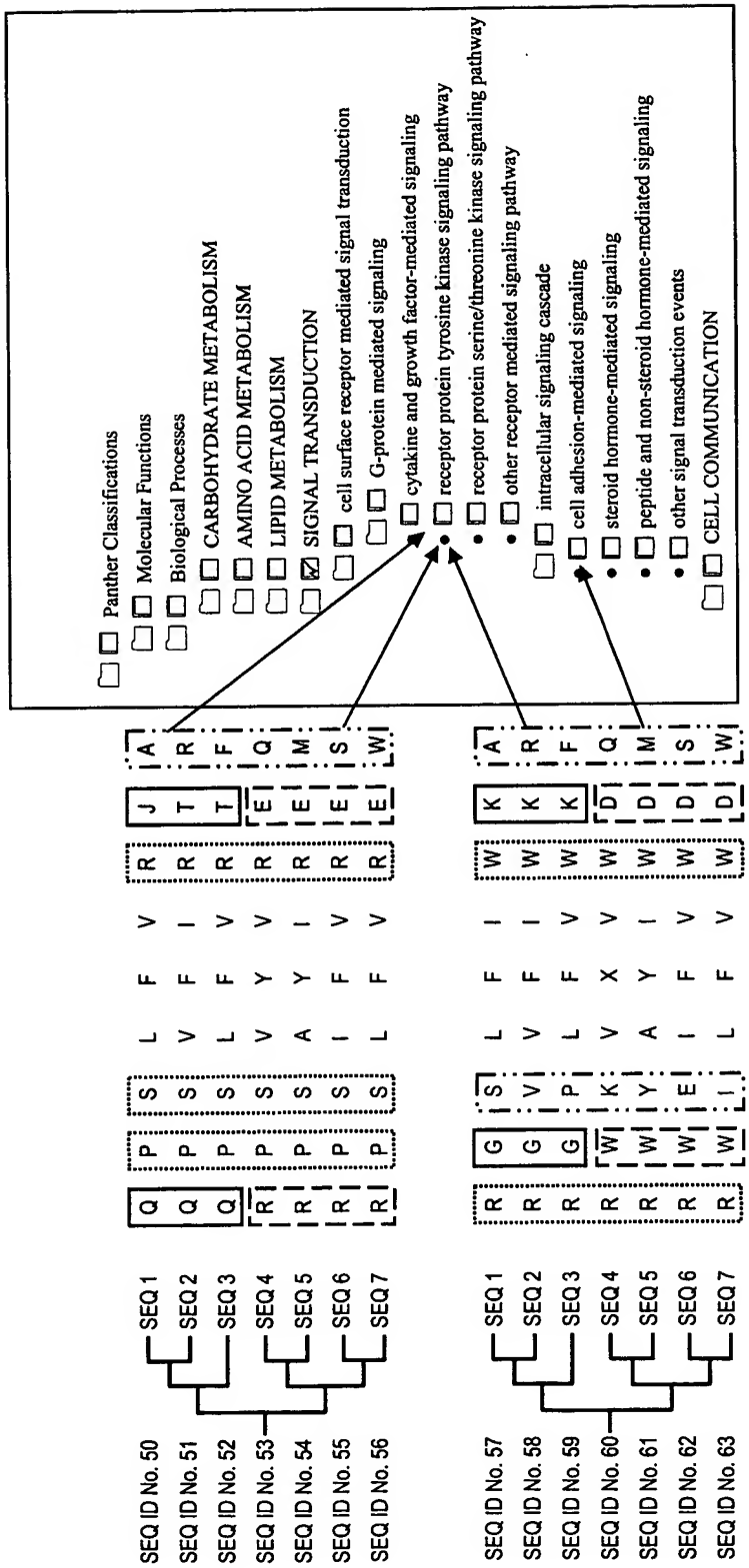

Panther Classifications
Molecular Functions
Biological Processes
CARBOHYDRATE METABOLISM
AMINO ACID METABOLISM
LIPID METABOLISM
SIGNAL TRANSDUCTION
cell surface receptor mediated signal transduction
G-protein mediated signaling
cytakine and growth factor-mediated signaling
receptor protein tyrosine kinase signaling pathway
receptor protein serine/threonine kinase signaling pathway
other receptor mediated signaling pathway
intracellular signaling cascade
cell adhesion-mediated signaling
steroid hormone-mediated signaling
peptide and non-steroid hormone-mediated signaling
other signal transduction events
CELL COMMUNICATION
SEQ ID No. 50
SEQ ID No. 51
SEQ ID No. 52
SEQ ID No. 53
SEQ ID No. 54
SEQ ID No. 55
SEQ ID No. 56
SEQ ID No. 57
SEQ ID No. 58
SEQ ID No. 59
SEQ ID No. 60
SEQ ID No. 61
SEQ ID No. 62
SEQ ID No. 63
SEQ 1
SEQ 2
SEQ 3
SEQ 4
SEQ 5
SEQ 6
SEQ 7

Fig. 49